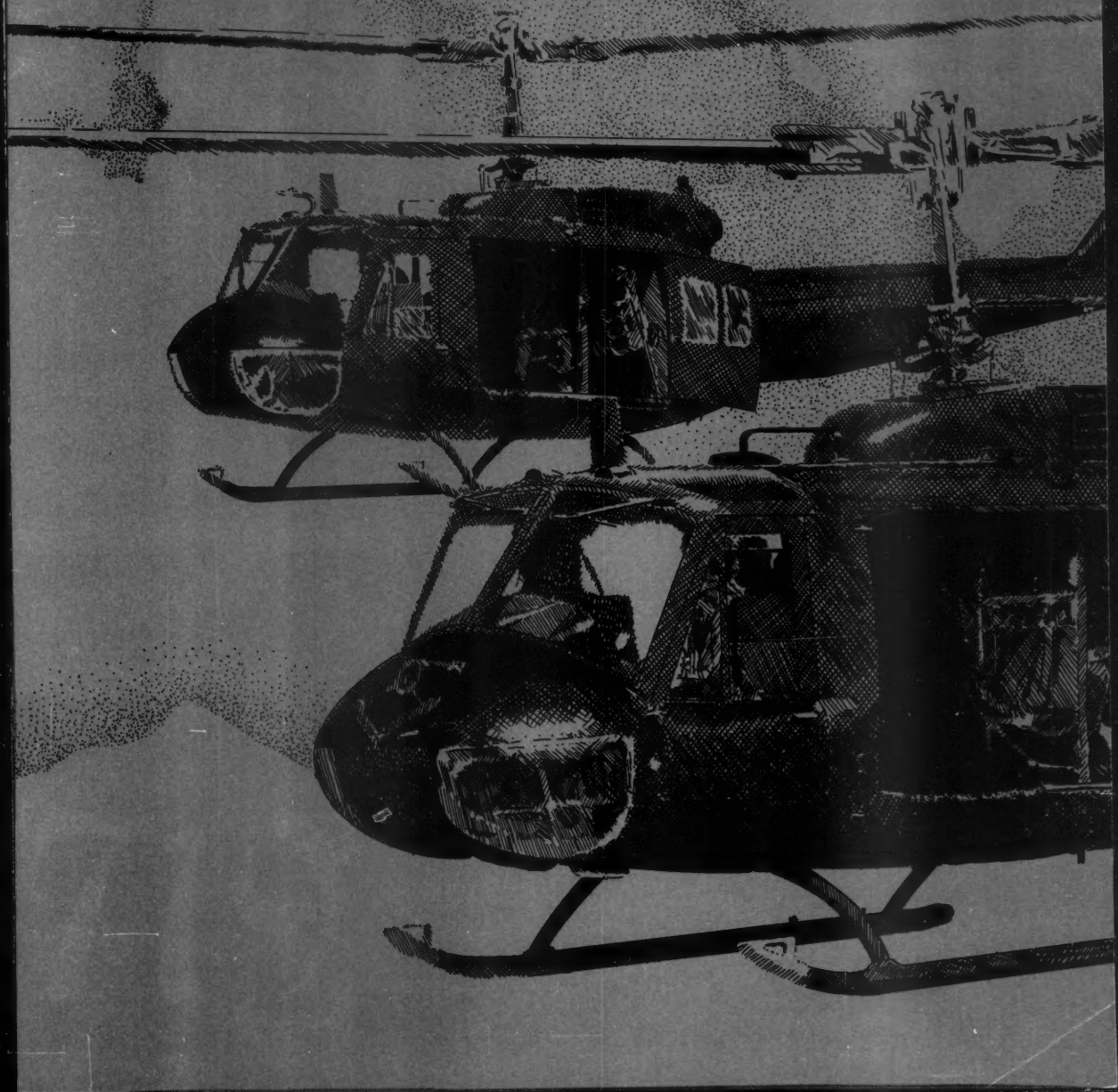
UNITED STATES ARMY

AVIATION DIGEST

AUGUST 1986



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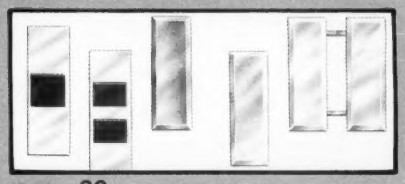
Cover: **Those soldiers who served in Vietnam will find the cover reminiscent of that time. "LAMSON 719, Part III: Reflections and Values" begins on page 2. Cover illustration by Paul Fretts.**



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The mission of the *U.S. Army Aviation Digest* (USPS 415-350) is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

The *Digest* is an official Department of the Army periodical published monthly under the supervision of the commander, U.S. Army Aviation Center. Views expressed herein are not necessarily those of the Department of the Army nor the U.S. Army Aviation Center. Photos are U.S. Army unless otherwise specified. Use of the masculine pronoun is intended to include both genders unless otherwise stated. Material may be reprinted provided credit is given to the *Aviation Digest* and to the author unless otherwise indicated.

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Use of funds for printing of this publication has been approved by the Secretary of the Army, 19 February 1985, in accordance with Army Regulation 310-1. Second-class postage paid at Daleville, AL, and additional mailing offices.

Active Army units receive distribution under the pinpoint distribution system as outlined in AR 310-2. Complete DA Form 12-5-R and send directly to CDR, AG Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220. For any change in distribution requirements, initiate revised DA Form 12-5-R.

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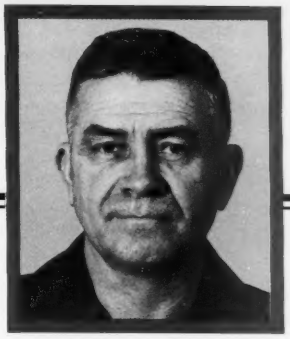
Major General Ellis D. Parker
Chief, Army Aviation Branch



Task Force 1-112

FOR THE FIRST time in the history of Army Aviation, an aircraft specifically designed for the scout role is within our grasp. That aircraft is the OH-58D Kiowa AHIP (Army Helicopter Improvement Program). However, several events have occurred that have delayed its procurement for the attack and cavalry roles.

During the ASARC III (Army Systems Acquisition Review Council), the Vice Chief of Staff, U.S. Army, directed the Aviation Center to form a test unit at Ft. Rucker to "scrub" the organization and operational concepts for AH-64 Apache and OH-58D equipped units; validate the OH-58D training program before the first fielding; and validate selection, training and operational effectiveness of the enlisted aerial observer (EAO 93B).

On 26 September 1985, during the AHIP DSARC (Defense Systems Acquisitions Review Council), OH-58D production was restricted, resulting in OH-58D use in the field artillery role only. Additionally, the test unit's mission was expanded to conduct an OH-58D follow-on evaluation (FOE) to show the advantages of the OH-58D over the OH-58C (baseline) in the reconnaissance, security and attack roles.

The test unit was designated Task Force 1-112 and was activated on 17 April 1986. It is a combination of a battalion headquarters section, three modified "J" series attack companies and one modified aviation unit maintenance company. The three attack companies consist of one OH-58D/AH-64 company, one OH-58C/AH-64 company and one pure AH-64 company.

Task Force 1-112 will be supplemented with Sikorsky contractor personnel for maintenance and fuel support. Their mission is to maintain the 10 AH-64s, 10 OH-58Ds, 10 OH-58Cs and numerous other support aircraft, which Task Force 1-112 will be using for the test/evaluation.

The FOE is not scheduled to start until March 1987. But, before starting the FOE, the Aviation Center must train Task Force 1-112 up to the company Army Training and Evaluation Program (ARTEP) level. Task Force 1-112 personnel now are receiving appropriate aircraft transitions and maintenance training. Next month, members of Task Force 1-112 begin individual and crew training at Ft. Rucker. In November 1986, Task Force 1-112 will deploy to Ft. Chaffee, AR, to conduct team through company training. At the completion of this training, each company will undergo a 1-week ARTEP.

All training will be evaluated by Directorate of Evaluation and Standardization and Department of Combined Arms Tactics to ensure that the Aviation Center is providing a fully trained and qualified unit. As the chief of the Aviation Branch, I will make the final determination whether or not Task Force 1-112 is fully trained and qualified to conduct the FOE.

At the completion of the Task Force 1-112 train-up, it will deploy to Ft. Hunter Liggett, CA, to conduct the FOE, which will be controlled by the Operational Test and Evaluation Agency (OTEA). OTEA, in conjunction with several Aviation Center agencies, has designed a comprehensive test plan that will be the tool used to weigh the differences in capabilities of the OH-58C and OH-58D. Hopefully, the results will provide the OH-58Ds for the attack and cavalry roles.

I can assure you that the importance of Task Force 1-112 and its mission cannot be overemphasized. The technology invested in the OH-58D for the scout role is seen as a necessity in the Aviation Branch and the Army as a whole. For this reason, the Aviation Center is and will continue supporting this effort to its full extent.

Illustration by Paul Fretts

LAMSON

719

Part III: Reflections and Values

Captain Jim E. Fulbrook, Ph.D., MSC

THE JUNE 1986 issue of the *Aviation Digest* contained "Part I: Prelude to Air Assault" of this three-part series. It reviews the history of the Vietnam War leading up to LAMSON 719, the most significant airmobile/air assault battle of the war and the only historical example of contemporary Army Aviation operating in a mid-intensity conflict. Part I defines the levels of conflict, describes Army Aviation missions and units, and discusses the concepts of fire support bases and airmobility in the Republic of Vietnam. It also discusses the Vietnamese culture and its impact on military operations.

Last month's "Part II: The Battle" describes immediate events leading up to LAMSON 719—the operations order, the battle itself and some of the battle statistics.

This article concludes the series by reviewing battle statistics and official operational and afteraction reports of the 101st Airborne Division (Airmobile) (April to May 1971). These reports and several other units' and commanders' debriefing reports on LAMSON 719 were declassified after 12 years (DOD Dir. 5200.10) and are available through the Defense Technical Information Center.

Also, this article presents comparison statistics on the Vietnam War to put the LAMSON 719 battle in better perspective; finally, the author gives some personal reflections about his experiences in Vietnam and Laos during LAMSON 719.

THE VALUE IN studying the Vietnam War, and in tapping the "corporate memories" and experiences of those soldiers who served in Vietnam, cannot be overemphasized.

This article stands alone for most of its information content. That is why a summary of the LAMSON 719 battle is provided. But, readers can get more information and definitions of terms by reading Parts I and II. (Copies can be obtained by writing to *Aviation Digest*, P.O. Box 699, Ft. Rucker, AL 36362-5000, or by calling AUTOVON 558-3178.)

Various official reports written in 1971 about LAMSON 719 total more than 300 pages. Space does not permit a complete review here, but the prophetic nature of the recommendations proffered by the chain of command in its review of the battle and the lessons learned are truly remarkable. Indeed, Army Aviation has refined and evolved its tactical doctrine beyond Vietnam, but it has not "reinvented the wheel." Army Aviation opera-

tions and lessons learned during LAMSON 719 probably contribute to current and developing evolution of Army Aviation tactical doctrine more than any other operation has in the past 20 years.

LAMSON 719 Summary

The principal objectives of LAMSON 719 were to interdict and disrupt the flow of enemy troops and supplies into South Vietnam along the Ho Chi Minh Trail in Laos. LAMSON 719 became the most serious test of the concept of airmobility. It came in a setting of helicopters operating on the battlefield as a critical member of a combined arms team, on a combined operation, in a deep attack.

LAMSON 719 was the first major test of the formalized Vietnamization effort. It bought more time for the Vietnamization program and more safety for the continued withdrawal of U.S. troops, by damaging North Vietnam's ability to launch offensives. And, hopefully it helped alter North Vietnam's intransigence in peace negotiations, which then were underway.

LAMSON 719 was launched across the Vietnam-Laos border in the vicinity west of Khe Sanh on 8 February 1971. The operation lasted 45 days and was terminated, for the most part, on 24 March 1971. It involved about 17,000 Army of the Republic of Vietnam (ARVN) troops supported by U.S. Army units of the 24th Corps. All aviation operations were principally supported by the 101st Airborne Division (Airmobile). Some 10,000 U.S. troops supported the ARVN attack into Laos.

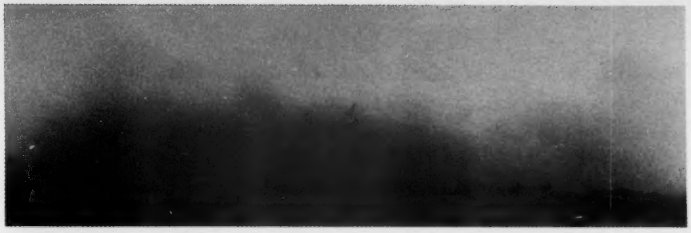
In LAMSON 719, the United States committed more air and artillery support to a single battle than at any other time during the Vietnam War. Aviation assets in the 101st were beefed up to the then equivalent of a three-division size force for an area of operation in Laos of about 53 km x 20 km. The 101st afteraction report listed assets of 659 helicopters in support of the operation. The ARVN deep battle was conducted without any U.S. ground forces or advisors entering Laos; but, U.S. air support was used to its maximum for transportation and firepower. The ARVN forces would become wholly dependent on U.S. helicopter support for resupply and troop insertions and extractions in Laos.

Strength of the North Vietnamese Army (NVA) was estimated to be 30,000 combat and 20,000 logistics troops in two main staging areas in Laos. The NVA expected an attack into Laos and upgraded its defenses and troop strength purposefully, to stand and fight. The enemy had several hundred antiaircraft weapons circulated among several thousand prepared emplacements, and artillery and armored regiments ready to respond to the attack.

The operations order for LAMSON 719 was written and generally executed in four phases:

- Phase I started 1 February 1971 and consisted of U.S. units reopening the Khe Sanh base and airstrip,

LEFT: 71st Assault Helicopter Company field location in Don Ha during LAMSON 719. Enlisted troops lived in tents; officers lived in dog kennels converted for troop use. TOP RIGHT: A view of the Xepon River in Laos. Note cliffs along edge which afforded good cover for enemy troops to engage helicopters. BOTTOM RIGHT: Tactical aircraft lay down suppression fire for helicopters during a combat assault in Laos.



A CH-47 is barely visible as it stirs up a huge dust cloud on Khe Sanh.

ARVN Marines on Khe Sanh lounge by a resupply sortie while waiting for instructions to load a helicopter.

and clearing Route 9 (a 1- and sometimes 2-lane dirt road) from Fire Support Base (FSB) Vandergrift to the Laotian border. Route 9 started in South Vietnam on the coast in Quang Tri and coursed westward across Vietnam and Laos. In 1968 Khe Sanh was the site of a major battle with U.S. Special Forces and Marine units battling NVA units. The Khe Sanh plateau had been abandoned for more than 2 years before LAMSON 719 was launched.

- Phase II began on 8 February 1971 and consisted of ARVN units attacking westward into Laos along three lines. Armor units spearheaded an advance down Route 9, while infantry units were helicopter assaulted to advance along the southern flank in the panhandle of Laos, and on a well-defined terrain feature called the "escarpment." Airborne and ranger units were helicopter assaulted to set up FSBs and flank protection to the north of the armor attack. Phase II continued with coordinated attacks to the west as far as a town called Tchepone, some 26 miles into Laos. By 10 March Phase II was completed.
- Phase III was exploitation. Search and destroy operations were conducted against enemy forces and bases. These operations were ongoing throughout Phase II.
- Phase IV consisted of the withdrawal of ARVN troops from Laos. This phase lasted from 11 to 24 March.

Throughout the operation, enemy opposition was intense. There were more NVA troops than was originally thought, and they had a great deal more armor (especially tanks) and artillery than expected. ARVN troops were subjected to infantry and tank assaults and bombardments by rockets, artillery and mortars. Several embattled ARVN bases were overrun or abandoned in the face of intense NVA attacks.

Despite massive U.S. air support and firepower, the LAMSON 719 battle continued into March. Personnel and materiel losses mounted steadily against the ARVN and the NVA gained the upper hand. Indecision and troop discipline slowed ARVN movement, especially in armor units, and reserves were not committed when the battle momentum turned against the outnumbered, outgunned ARVN troops. It was during LAMSON 719 that the first head-to-head armor battles took place in the Vietnam War which, incidentally, were won by the ARVN units.

One of the most serious problems and impairments in the operation came from intense antiaircraft fire against U.S. helicopters, particularly the utility and cargo helicopters around and in landing zones (LZs). The NVA employed "hugging" techniques by getting in as close to ARVN units as possible, then waiting to engage helicopters on "short final," when landing and again when departing LZs. The NVA also usually struck LZs with deadly mortar and/or artillery barrages. Too often resupply and troop insertion or extraction sorties could not be completed, even with support of helicopter gunships, artillery, tactical air and B-52s. Although unplanned, ARVN units that were besieged on FSBs became like decoys used to set up the enemy for massive U.S. bombing, particularly by B-52s. Such strikes took heavy tolls on NVA forces.

Even aeromedical evacuation (MEDEVAC) helicopters with their Red Cross insignias were not exempt from NVA antiaircraft fire. As the wounded and dead mounted without being evacuated, and as supplies ran low, on occasion ARVN units lost their integrity and were routed by the NVA. Some ARVN troops rushed to and overloaded landing helicopters in desperation to get aboard and return to Khe Sanh.

Despite problems created by the NVA, LAMSON 719 successfully met most of the operations objectives. But, it fell far short of what it could and should have been. Most ARVN units inflicted serious losses on the NVA and showed great valor against withering odds. In the mid-intensity conflict that LAMSON 719 was, significant losses of troops and equipment were inevitable. In the final analysis, ARVN troops, for the most part, were equal to or better than those of the NVA. Figure 1 summarizes the casualty statistics.

LAMSON 719 revealed some serious flaws in the U.S./ARVN war effort, particularly in the progress of the Vietnamization program. The ARVN force was not sufficient in size and a long way from being able to provide its own air and fire-

power to thwart determined NVA aggression. Despite greater NVA losses, there were significant ARVN losses: The inability to extract all of their dead and wounded greatly damaged ARVN morale *and* the confidence of the South Vietnamese people and Army.

Army Aviation In LAMSON 719

For Army Aviation, LAMSON 719 proved the concept of airmobility beyond a doubt. The NVA was well-versed in the four employment principles of air defense: *mix, mass, mobility and integration*. However, Army Aviation countered enemy efforts more times than not. LAMSON 719 was the costliest airmobile assault in terms of loss of lives and equipment in the entire war; yet, measured against such intense antiaircraft fire in a mid-intensity battle, losses were remarkably low. In particular, about 80 percent of the aircraft shot down were lost in the immediate vicinity of "hot" LZs where helicopters were most vulnerable. Figure 2 portrays a summary of Army Aviation (101st) battle statistics.

LAMSON 719 produced several significant events in the history of Army Aviation that we should all be aware of:

• More helicopters received combat damage and were shot down during LAMSON 719 than at any other comparable time in the Vietnam War. Of the Army helicopters committed to LAMSON 719, 68 percent received combat damage and 14 percent were lost.

• The combat assault on Tchepone, some 26 miles into Laos, involved more helicopters in a single lift than any combat air assault in Army Aviation history. On 6 March, 120 UH-1H Huey helicopters airlifted two battalions of ARVN troops from Khe Sanh to LZ HOPE in the assault on Tchepone. An armada of helicopter gunships also participated.

• For the first time in combat, AH-1G Cobra gunship helicopters engaged enemy armor. During LAMSON 719, Army "CAV" gunships were credited with destroying six tanks and immobilizing eight more. More details about these armor engagements follows in later paragraphs.

• Two of the worst days in Army Aviation history occurred during LAMSON 719. On 3 March, in a helicopter assault to establish LZ LOLO, 11 UH-1H helicopters were shot down in the immediate vicinity of the LZ and some 35 UH-1s received combat damage. On 20 March, attempts to extract ARVN troops out of LZ BROWN resulted in 10 UH-1H helicopters being shot down and some 50 more receiving combat damage; 29 percent of all UH-1H combat losses during LAMSON 719 occurred on those two fateful days, but Army Aviation still completed its missions.

During LAMSON 719 the 101st Airborne Division (Airmobile) and units under its operational control (OPCON) lost 90 helicopters. Also, five Army fixed wing aircraft were lost, plus two ARVN helicopters. U.S. Air Force, Navy and Marine losses were given at eight aircraft. Not surprisingly, unofficial estimates published by the news media listed the damage and loss statistics higher: 600 and 107, respectively.

During the 45-day operation some replacement aircraft were received and other aircraft lost for maintenance (scheduled rebuilding, etc.) or noncombat accidents. So, the number of helicopters involved had to vary. The 101st established a data base by unit and tail number for the aircraft initially employed in the battle. From this data base, the aviation statistics summarized here are considered highly accurate. Nevertheless, even if higher estimates of helicopter losses and battle damage were more accurate, the survivability of helicopters in the mid-intensity, high antiaircraft threat environment of Laos would still be most remarkable.

In the 45 days of combat flying in support of LAMSON 719, 101st

	Killed in action	Wounded in action	Missing in action	Equipment Lost (excluding aircraft)
U.S.	102	215	53	(none in Laos)
RVN	1,146	4,236	246	71 tanks 96 artillery 278 trucks
	45% casualty rate for committed troops in Laos.			
NVA	14,000	Unknown	Unknown	100 tanks 290 trucks
	Estimated 50% casualty rate.			

FIGURE 1: Casualty Statistics.

Aircraft	Total Aircraft	Aircraft Damaged	Damage Incidents	Aircraft Lost	Percentage Lost
OH-6A	59	22	34	6	10
UH-1C	60	48	66	12	20
UH-1H	312	237	344	49	16
AH-1G	117	101	152	18	15
CH-47	80	30	33	3	4
CH-53	16	14	14	2	13
CH-54	10	1	1	0	0
OH-58	5	No Data	No Data	No Data	No Data
TOTAL	659	453	644	90	14

FIGURE 2: Helicopter Damage and Loss Statistics.

Four soldiers were killed in this crash of a UH-1C helicopter when it took off from Tin Phuoc after refueling. The noncombat accident took place on 6 July 1971. It was caused by loss of rotor rpm in a turn. INSET: This UH-1H crashed when a ground soldier's poncho flew up into the tail rotor resulting in a loss of tail rotor control. Luckily no one was killed.

Airborne Division (Airmobile) and OPCON units logged a total of 78,968 flying hours and completed 204,065 sorties.[1] For the 101st, 426 helicopters logged 28,836 hours in February (68 hours per airframe) and 31,067 hours in March (73 hours per airframe). There was a daily average of 161 aircraft flying, involving 575 aircrewmembers.

During LAMSON 719 aircrewmembers were waived from a restriction to fly no more than 140 hours in a 30-day period. It was not uncommon to find aircrewmembers with some 300 combat flying hours during LAMSON 719. Indeed, Army Aviation displayed a truly heroic level of mission integrity on a daily basis. Anyone who flew the LAMSON 719 gauntlet in Laos learned how serious a war can become as compared to what came to seem like almost routine low-intensity conflict, as otherwise experienced in South Vietnam.

Casualties of the 101st Division over the 45-day period are listed as: 26 killed in action, 152 wounded in action and 32 missing in action. This is an average of 4.7 aircrewmember casualties per day. For every 1,000 hours flown, slightly more than five aircrewmembers became casualties. For every 1,000 sorties in Laos there were five casualties compared to less than two casualties per 1,000 sorties in South Vietnam for the same period. Also, in Laos, two aircraft were lost per 1,000 sorties, which compared as a 13 times (13X) greater damage incidence than occurred in South Vietnam for the same 45-day period.

One area of especially interesting statistics is the noncombat accident rates. During LAMSON 719, 11 helicopter accidents were reported, representing a rate of 29.0 accidents per 100,000 flying hours. In the same period a year earlier, the 101st experienced an accident rate of more than 40 accidents per 100,000 flying hours. For all of Vietnam, the Army Aviation accident rate in fiscal year (FY) 1970 was 23.3 accidents per 100,000 flying hours; in FY 71 the accident rate was 19.0. Compared to the current Class A through C overall accident rate of 8.81 for FY 85 per 100,000 flying hours, Army Aviation has indeed come a long way in aviation safety.

It's appropriate to point out some other statistics about Army Aviation in Vietnam. The U.S. Army Aviation Center estimates that some 13,000 Army aircraft cycled through Vietnam from 1961 to 1973.[2] Of all these aircraft, nearly 6,000 were totally lost due to combat or noncombat accidents. From 1968 to 1971, for instance, 4,510 rotary wing aircraft were lost: 2,879 (64 percent) to combat and 1,631 (36 percent) to noncombat! In the same period, 499 fixed wing aircraft were lost: 292 (59 percent) to combat and 207 (41 percent) to noncombat! These numbers are not exaggerated. Think about it—nearly 40 percent of the aircraft lost in Vietnam were *not* down as a result of combat action!

The mission of the Army Medi-

[1] A sortie was not counted as the number of landings. A takeoff, landing and return from one location to another was one sortie unless a return mission was performed for a second sortie. Hence, a combat assault to insert troops and return empty was logged as one sortie; whereas taking beans or bullets to one location and returning with mail or a passenger to another location or point of origin was logged as two sorties. On a good day a utility helicopter on a single-ship resupply mission could complete 20 to 30 sorties a day for a supported unit.

[2] The Army Aviation fixed and rotary wing aircraft peaked at 4,549 in Vietnam in March 1970. By July 1971 the number was down to 3,200 as U.S. Forces were turning equipment and responsibilities over to the South Vietnamese.

cal Department is to "conserve fighting strength." While it's not polite to steal, it is also accurate to say that the mission of Army Aviation's safety and maintenance programs is to "conserve fighting strength." During the Vietnam War, the single most significant "combat multiplier" Army Aviation could have taken advantage of was in the area of aviation safety. Field Manual 101-5-1, "Operational Terms and Symbols," defines a combat multiplier as a supporting and subsidiary means that significantly increases the relative combat strength of a force while actual force ratios remain constant. A greater emphasis on aviation safety could have magnitudinally increased the relative combat strength of the Army Aviation force in Vietnam. Hopefully, we have learned that and will not let aviation safety slip away in future conflicts.

During the Vietnam era, an estimated 22,000 helicopter pilots were trained by the Army and served at least one tour in Vietnam. From 1961 to 1973, 1,103 aviators were listed as killed in Vietnam from all causes. Official Army casualty statistics listed a loss of 1,045 aviators killed due to combat and noncombat aviation mishaps over the period 1 January 1961 to 30 June 1979. From these statistics, 618 (59 percent) were due to combat and 427 (41 percent) were due to noncombat accidents. Hence, several different statistical sources are in fairly close agreement in both combat and noncombat personnel and aircraft losses.

Many UH-1H resupply aircraft had to land in less than suitable LZs. Here a "slick" has landed and shutdown within a small Vietnamese outpost.

In LAMSON 719, however, the ratio of accidents to total losses for helicopters was much lower (14/104) at 13 percent. This was attributed to a greater "vigilance" by aviators in the high threat environment. Most accidents that did occur were attributed to aviator "let down" away from the combat environment.

The unsung heroes of LAMSON 719 had to be Army Aviation maintenance and logistical support people. Remarkably few aircraft were lost due to mechanical failures and "operational readiness" levels remained fairly high for most units throughout LAMSON 719. This is even more remarkable considering that most units OPCON to the 101st operated out of field sites without the benefit of proximity to intermediate and higher maintenance levels.

Lessons Learned From LAMSON 719

The list of lessons learned, taken from the 101st reports, do not flow together, so each area is introduced by helicopter silhouettes.

During LAMSON 719, combat assaults were primarily planned on intelligence pertaining to antiaircraft locations rather than enemy troop concentrations. Employment of air cavalry units in reconnaissance to gather current intelligence in advance of combat assaults was found to be critical for screening flight routes and pickup zone and landing zone sites in Laos. Sensor implants also were found to be effective in identifying neutralization, suppression, avoidance and probable safety zones.

The most critical factor to the success of all aviation operations in the mid-intensity environment was considered to be thorough, detailed planning. Because of the high density and effectiveness of antiaircraft fire, it was imperative that all missions be executed swiftly, precisely and efficiently. All available assets had to be employed for each operation. For instance, MEDEVAC helicopters rarely made extractions without two gunships for fire suppression support. Toward the end of LAMSON 719 aeromedical evacuation missions used four gunships whenever possible and coordinated a second "Dustoff" or "slick" (UH-1H) helicopter for high-ship support and downed aircrew recovery.

Planning for refueling and rearming points caused a lot of problems because they were not given the priority they deserved. They usually lacked suitable areas for approach, departure and hovering maneuverability, and on occasion they were unable to accommodate the large volume of aircraft. Priority planning was essential since mission delays in the mid-intensity tactical environment were always costly.

Marginal weather was a problem throughout the LAMSON 719 area of operation. Multiship combat assaults required greater planning still, and more flexibility in adverse weather:

- Aircraft had to be ready without delay.
- Continuous weather checks were essential.
- More detailed map planning with suitable time to conduct route reconnaissance and to complete air movement tables was needed. The above were considered critical for successful multiship combat assaults.

VHIRP (vertical helicopter instrument (IFR) recovery procedures) were unheard of at the time. Most aviators were not proficient in instrument flight rules. There were no radar controllers; the few navigational aids on the coast were unreliable; and most aviators did not have approach plates nor did they know approach procedures. If an aircraft inadvertently entered instrument meteorological condi-

tions the general procedure was to climb to 5,000 feet above ground level or try to get "VFR (visual flight rules) on top" of the clouds; look for a "hover hole" to descend back to ground level; or fly east at least 30 minutes to get over the South China Sea, then descend with your fingers crossed.

Effective recovery of downed crews, and aircraft when possible, had to be accomplished without delay to be successful. Delays usually resulted in large-scale operations and tactical air support to recover crews. Some aircrew recovery operations were conducted by U.S. Air Force search and rescue teams flying armored-plated CH-53 helicopters. Recovery plans for downed crews and immediate "high-ship" assets (usually an unloaded UH-1H) flying above the mission aircraft, along with the command and control (C&C) aircraft, were considered essential.

On some occasions aviators attempted to fly damaged aircraft out of Laos rather than electing to land in a secure area. This resulted in the loss of at least four aircrewmembers. Aviators were encouraged to put aircraft on the ground whenever any difficulties arose. Just as a humorous note here: The 101st report stated that, "Crewmembers' fears of setting down in hostile territory were alleviated by ensuring they were knowledgeable in survival, escape and evasion (techniques)." This statement was optimistic at best. Most aviators viewed any downtime in Laos as their being worse off than a fish out of water.

During LAMSON 719, hydraulic failures and engine failures caused some problems for aircraft availability. Several solutions were offered for maintenance's use, but the most interesting was a recommendation to place a form in aircraft logbooks for keeping "daily engine recording" (DER) checks to compare engine performance. DER checks were the precursor to the engine "health indicator tests" currently performed in Army aircraft.

A crew on a stripped-down UH-1H "smoke" aircraft rests before a combat assault.

The sharp increase in damage to helicopters created an increased demand for unscheduled maintenance, especially for sheet metal, prop and rotor, and electronics and avionics repairs. Maintenance activities were required to operate 24 hours a day and were augmented at all levels as much as possible. Controlled cannibalization on retrograde or unserviceable aircraft greatly reduced supply needs; stockage of such quick change assemblies as engines, rotor blades and heads, transmissions and tail booms markedly decreased turnaround time for getting aircraft back into the battle. In some units an aircraft commander, crewchief and gunner habitually flew one aircraft. Whenever possible, when the aircraft went down for scheduled maintenance the crew went down with it and assisted in the maintenance work.

Communications security was a serious problem. The ARVN lost more than 1,500 radio sets in Laos. In the latter part of the operation a call to a field location to "pop smoke" (with a colored smoke grenade) would frequently result in many locations popping smoke. ARVN and NVA troop concentrations were extremely difficult to distinguish except on fire support bases in Laos. Frequently, field units had to use smoke grenades (or other means) at least twice to verify their locations. On at least one occasion (witnessed by the author) an aircraft and its crewmembers were lost when a C&C aircraft failed to properly verify an LZ which turned out to be an NVA ambush.

There were serious problems with secure communications between aircraft and United States' ground units. ARVN units did not have secure radio capabilities. Only FM (frequency modulated) radios had secure capabilities in some aircraft and they were usually not set properly for each day's frequencies. Implementing frequency changes for security initially caused problems because such changes were made at 2400 hours. This caused units to have to violate strict light and noise discipline. Frequency changes were later changed to occur at first light. It's safe to say that, from the first day to the last, communications security by U.S. and ARVN forces was terrible; that of course was an advantage for the NVA.

Air cavalry teams employing scout aircraft to locate the enemy, usually by drawing fire, were generally unsuccessful and this procedure was abandoned as a tactic in Laos. The most successful

teams consisted of one AH-1G *low*, and two or three AH-1G helicopters *high*, with one UH-1H for C&C and downed crew recovery. The principal reason cited for this was the vulnerability of the scout aircraft because they did not have an immediate fire suppression capability. A serious emphasis was placed on the need for scout aircraft to have some fire suppression capability. Of course, the mast mounted site on the new OH-58D (AHIP) scout helicopter does afford a greater standoff range to conduct reconnaissance missions against threat forces.

During LAMSON 719, Army Aviation gunship helicopters were not well-equipped nor prepared to engage NVA tanks. While Army AH-1Gs were credited with destroying six tanks and immobilizing eight, there were actually 66 sightings reported. The NVA had PT-76 and T-54 tanks. Only thin-skinned PT-76 tanks could be engaged because Cobra gunships did not carry or even have available, armor piercing ordnance. When tanks were spotted by gunships the AH-1s rarely had enough ordnance to engage more than one or two. In the most effective tank engagements, Army helicopters located and fixed targets, then turned them over to tactical fighter-bombers. During LAMSON 719, tactical air support was frequently available on short request, usually within 15 minutes, although low ceilings and poor visibility greatly limited their support in Laos.

Enemy hugging tactics, plus a large dispersion of high troop populations concentrating small arms and heavier weapons antiaircraft fire, cannot be suppressed easily by aerial or ground artillery. Even though there was not an enemy aviation threat, antiaircraft engagement discipline of the NVA was effective enough to create some "no go" terrain for Army helicopters.

On a deep attack in a mid-intensity conflict the accomplishment of Army Aviation missions takes on an even greater significance, especially for such missions as resupply and aeromedical evacuation. MEDEVAC assets were not adequate to handle the high number of casualties. For moral purposes and troop morale it is just as important to evacuate the dead as well as the wounded—on the same helicopter if need be. This was a particularly acute problem with the South Vietnamese because their cultural tradition emphasized close familial ties.

Cargo helicopters were more limited than other helicopters in their ability to complete sorties in the mid-intensity environment of Laos. The fact that cargo helicopters were not able to resupply critically needed artillery ammunition and other supplies to ARVN FSBs played a significant part in limiting the duration and the success of LAMSON 719 operations on the ground for the ARVN in Laos.

While multilift, tight formation combat assaults were typical within South Vietnam, such tactics were disastrous in the mid-intensity environment of Laos. The most successful assaults were by single-ship formations with 30-second separations.

Most unit operating procedures called for en route flights in Vietnam to be conducted at 1,500 feet above ground level (AGL) and at least at 3,000 feet AGL in Laos. Low level or nap-of-the-earth (NOE) flying was still officially prohibited, even during LAMSON 719; but it was used much more frequently as antiaircraft fire intensified. Comments about NOE flight in the afteraction report are particularly interesting and directly quoted here: "Under certain circumstances combat assaults, resupply missions, and medical evacuation were better conducted by low level, nap-of-the-earth flight than by high altitude flight. Aircraft flying the nap-of-the-earth presented fleeting targets to enemy gunners and gained surprise by their sudden and unexpected appearance in the landing zone and quick departure. When this tactic was used, a guide aircraft flew at a higher altitude above the low-flying aircraft to vector them to their objective. Nap-of-the-earth flight was sometimes appropriate and effective when aircraft flew into a firebase or friendly position surrounded by enemy who used "hugging" tactics and placed accurate fire on the landing zone or when low cloud ceilings forced pilots into choosing between flying the dangerous intermediate altitudes or at treetop level. Nap-of-the-earth flight was not used frequently."

No doubt the author of the paragraph above felt compelled to add the last sentence to dilute any sanctioning of low-level flying. Interestingly, after LAMSON 719 most 101st and OPCON units returning to their previous areas of operations and missions in South Vietnam resumed using the earlier tactics of tight formation combat assaults and were still prohibited from flying NOE. But, LAMSON 719 had converted a great many aviators who flew NOE as often as possible, especially on single ship resupply missions. While NOE techniques were not officially recommended in the afteraction reports, LAMSON 719 probably did more to move Army Aviation tactical doctrine toward such techniques (as we currently employ and as were being developed before Vietnam) than any other operation in the war.

Personal Reflections

Editor's note: CPT Fulbrook concludes this three-part coverage of LAMSON 719 by offering (below) his personal reflections on the values of the lessons learned by Army Aviation in LAMSON 719. His thoughts, plus those of others who reviewed this series on LAM-

Several hundred villagers line the side of a hill leading up to a Vietnamese outpost. A local province chief with loudspeaker addresses the crowd who are protesting the departure of U.S. troops from LZ Siberia across the river. Many Vietnamese feared that the ARVN troops would not provide the security the American troops had provided to this "pacification" area.

SON 719, will be published in an Aviation Digest *early this winter. That gives you a chance to participate with us in the LAMSON 719 review article. You don't have to be a LAMSON 719 vet. Your functional thoughts about this series of articles, or of other LAMSON 719 opinions or thoughts, also are welcome. Send them to Editor,* Aviation Digest, *P.O. Box 699, Ft. Rucker, AL 36362-5000. Please send them not later than 1 November 1986. Your thoughts are very important!*

Nothing I'm about to write is representative of any official policy of anybody or any organization beyond me (although I believe most Vietnam-era aviators will strongly agree with most of my observations).

I served in Vietnam as a warrant officer from May 1970 to June 1971. I was assigned to the 71st Assault Helicopter Company (AHC), flying UH-1H helicopters out of Chu Lai, a city south of Da Nang, in the northernmost corps region of South Vietnam. The 71st AHC supported units of the Americal, or 23d Infantry Division.

During my tour I logged 1,420 hours of combat flight time. In all that time I took "hits" from enemy fire on only one occasion: On 6 March 1971, as Chalk 47, on the 120-helicopter assault to Tchepone in Laos. In my unit I was one of the highest time aviators with the least number of hits among the area of operations (AO) pilots. Aside from a little bit of luck, the reason for this was because I flew low level anywhere and everywhere, every chance I got. On several occasions, superior officers threatened to take my aircraft commander (pilot in charge) orders because I was a "cowboy and unsafe." Admittedly, at the time I was a young whipper snapper, undaunted by threats. After LAMSON 719, however, many pilots who routinely flew low level were to a large degree vindicated. NOE flying techniques were officially reinstituted to aviation training around 1975. Actually NOE flight tactics were being developed at the Aviation Center, Ft. Rucker, in the late 1950s and early 1960s, but were somehow dropped during the Vietnam era.

The rest of this section consists of reflections that I believe are worth passing on to other aviators and to Army planners.

If we are ever called upon to do the jobs we are trained for in combat, it's important to realize how much more a part of "living history" each of us becomes. While I was in Vietnam I took several hundred photographs with a 35 mm camera, but that wasn't enough. I wish I had done more. Remember: Save! Save! Save! Keep a daily diary. Have family members save and return your letters. Keep track of names and addresses of your compatriots and file important documents and maps. Collect patches and other memorabilia—they all will mean much more later on, even though it may not be apparent now.

When you are under fire in a mid-intensity battle, there is no time to read a map or thumb through a CEOI (Communications-Electronics Operation Instructions) looking for radio frequencies and call signs. A good AO pilot memorizes a map in less than a week. When an aviator is given a mission sheet it includes at least one frequency and call sign. In a high threat environment if proper communication and LZ confirmation cannot be established the sortie should be aborted. This

ABOVE: A small country store in Tin Phuoc. In front of most homes and shops a sign was placed over the entrance to welcome visitors and acknowledge the senior family member—part of the Vietnamese Confucianist and ancestor worship beliefs. RIGHT: Aside from the war, Vietnam is a beautiful country. A pastoral setting at Marble Mountain in Da Nang.

does not mean that aviators should be cavalier, dogmatic or uncooperative with the units supported. The highest value anyone can subscribe to in combat is "mission integrity." Use your usually superior radio communications capabilities and command training and experience to effect better coordination in the rear area. This enables missions to move smoothly where it can count the most—in battle.

Generally, there are two types of aviators when bullets start flying. All of us experience a lot of anxiety, but some have a facilitating anxiety and actually fly more precisely. Others have a debilitating anxiety and overtorque or overcontrol their aircraft in an instant. You can never distinguish aviators with the debilitating type of anxiety until they actually get into a serious combat or emergency situation. Once such aviators are identified, and if they must remain as AO pilots, they are better off being copilots, and being purposely paired with aviators who do well under pressure.

All of us respond differently to anxiety in combat, regardless of our type. During the few occasions when I truly feared for my life (all of which occurred in Laos during LAMSON 719) I was particularly calm and confident. Yet, away from the danger, I quivered so badly the copilot had to take the controls. Upon returning to the combat situation a short time later I almost instantaneously regained my composure. A copilot you are confident with makes an even greater difference in combat. Make no mistake, combat is quite exhilarating.

During my tour in Vietnam I had two unit commanders—the best and the worst commanders I have known. The importance of the commander for unit morale and effectiveness, especially in combat, cannot be overemphasized. One serious problem arose in the selection of pilots in command (PICs). The good commander allowed the PICs of each platoon to select when their copilots would be given PIC status. Three months incountry and at least 300 flying hours were requirements. The "other" commander personally selected PICs and made all commissioned officers PICs and flight leaders regardless of their experience. One captain with less than 1 month incountry was at the controls leading a flight into an LZ when enemy fire was taken. The inexperienced aviator immediately overtorqued the aircraft, requiring a major powertrain overhaul. The other commander, himself on another mission, stretched the four bolts that attach the tailboom to the rest of a UH-1H by habitually flying out of trim when trying to be an air mission commander. There are more stories: some real horror stories that end tragically. But the point is that poor commanders demoralize and reduce combat effectiveness of even previously superior performing units—and they do it in a hurry! If you are fortunate, a good subordinate leader can take charge and help restore unit integrity.

In developing its weapon systems, Army Aviation places greatest emphasis on types and sophistication of Communist air defense assets and helicopter air-to-air capabilities. This is fine, but the highest probability for future battles is at the low-intensity level where such weapons will be less of a factor. I contend, however, that regardless of the adversary or the level of conflict, in any future battles more aircraft (especially helicopters) will still be lost to small arms fire than to any other weapon system. Foot soldiers or terrorists and their rifles will continue to be Army Aviation's most serious threat. This will be even more applicable to fluid battlefields where small unit terrorist cells could attack targets anywhere.

Let's not forget that on the battlefield foot soldiers make the greatest difference. Only they can effectively take, hold and control terrain. In current air-land battle doctrine Infantry, Armor and Field Artillery soldiers would not do so well without Army Aviation, the newest member of the maneuver arms. But, neither can Army Aviation succeed without the integral efforts of the combined arms team. The principal mission and duty of Army Aviation remains: To assist the maneuver force to accomplish its objectives by serving at all levels as combat, service and support arms of the combined arms team!

I believe the most significant combat multiplier in the Vietnam War was civil-military affairs. Understanding the cultural influences and characteristics of the people is critical—they are every bit as important as knowing the terrain, especially in a low-intensity conflict. We could win every major battle then lose the war by failing to win the hearts and minds of the people we seek to defend, and by lacking the advocacy of Americans who must support us.

Unfortunately we failed to inform the American public, and as a result most soldiers who went to Vietnam were not aware of the purposes and objectives of the war. We served in Vietnam to protect the freedoms of a nonviolent, communal culture against a countercultural, oppressive and atheistic force. We were the country that could save the "wimp from the town bully." Our purpose was honorable and justifiable—but somehow we lost sight of it.

Most people are not aware of the significant impact the culture of the Vietnamese people had on daily military operations. I've been to the Aviation Officer Advanced Course in the past year, and I have talked to many of the instructors of the Officer Basic, Precommand and Warrant Officer Career Courses. The content of these courses is excellent, but there is a noticeable deemphasis or failure to recognize the importance of civil-military affairs and culture or demography (loosely, the geography of people) and how they influence military operations. This is particularly true in the intelligence planning of the battlefield process where such factors are not even given a sentence's worth of lip service.

Simply put, the more one knows about the Vietnamese and their culture, the easier it is to understand the Vietnam War. I'm sure that soldiers who fought in Korea, Lebanon and Grenada would agree with me about how important civil-military affairs are to the success of military campaigns.

In these last three issues of this magazine I have attempted to provide a "peek" through a small window at Army Aviation's first sustained and significant encounter with mid-intensity combat—LAMSON 719; there is much more that many more people could bring up about (specifically) the value of Army Aviation airmobile/air assault lessons learned in LAMSON 719, and (generally) how they relate to other developments in air assault tactical doctrine. As stated, the *Aviation Digest* is ready to print functional comments from reviewers and readers. Send in your thoughts—you'll be doing our branch a favor.

ACKNOWLEDGEMENTS

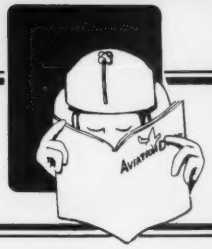
The author gratefully acknowledges the contribution of photographs by CW4 Doug Womack, CW4 Mike Harbin and CW4 Bob Rench. Also, the photographic section at the U.S. Army Aeromedical Research Laboratory was a great help in reproducing some of the photographs for publication. In addition, the author appreciates the encouragement received from Captains Mike Moody and Dave Wabeke of the Directorate of Combined Arms Training at the Aviation Center for developing the LAMSON 719 series beyond the state of anecdotal war stories to that which you have before you.

ABOUT THE AUTHOR

After Captain Jim E. Fulbrook returned from Vietnam in 1971 he continued his Army Aviation career until 1981 as a reserve warrant officer aviator in the Delaware and New Jersey Army National Guard units. He completed a B.A. degree in psychology from Glassboro State College, and M.S. and Ph.D. degrees in biology at the University of Delaware. Dr. Fulbrook's academic background is in vision research and neuroscience. In 1981, he received a direct commission to captain in the Medical Service Corps and returned to Active Duty serving as a research scientist in the U.S. Army Aeromedical Research Laboratory, Ft. Rucker, AL. Captain Fulbrook also is a Master Army Aviator with more than 3,000 flying hours and holds an instructor pilot rating. Recently, he completed aviation refresher training and the UH-60 Black Hawk transition for assignment as an aviator in an aeromedical evacuation unit in Germany.

Captain Fulbrook is continuing to assemble references and information for further articles about LAMSON 719. Anyone who participated in LAMSON 719 and has information, photographs, negatives or other memorabilia they can share (all returnable) please contact: Captain Jim E. Fulbrook, 236th Medical Detachment, APO NY 09178. In particular, information is being sought about the "Witch Doctor Six" incident and on corroborating statistics on the battle in general.

VIEWS FROM READERS



Editor:

After just finishing glancing through the Views From Readers [VFR] section in the March 1986 issue, I have to wonder why you entitle it that when the section is mostly filled with requests for articles and back issues. Why bother printing all of that? The majority of personnel that read your publication look forward to reading letters from some grizzled old CW4 who makes more sense in one letter than all of your contributors combined. If people want back issues and you can't comply, just write them a short note, no need to publish it for the whole world to read.

Second, why not begin a new column concerning flying tips, techniques and experiences learned by senior aviators and IPs [instructor pilots] by aircraft on a monthly basis? *Aviation Digest* SHOULD BE a forum among aviators, older to younger, experienced to less experienced, concerning issues of actual flying proficiency, technique and experiences learned. The doctrine we can get out of the field manuals, but the kind of information I'm talking about just isn't available anywhere in a published monthly forum. The Views From Readers section could be greatly improved by publishing more of this kind of information, in my opinion.

CPT Harry Helfrich
Aircraft Maintenance Platoon Leader
Norman, OK

Editor's Note: It is agreed that "how to fly," or "I learned about flying from that," are among the best and most interesting letters (and articles). The *Aviation Digest* publishes all that it can get, and the large majority of *Aviation Digest* readers are happy with what the magazine has been able to publish. The latest readership survey (1985) showed 91 percent of the readers feel the *Aviation Digest* is "interesting" and 93 percent say it is "informative." Concerning pure "flying experience" articles, 41 percent of the readers want the same amount now being published, 54 percent want more and 5 percent want less.

The *Aviation Digest* has carried "I learned about" type columns or departments at various times during the last 25 years. But in each case the sources of such columns were not able to sustain them on a monthly (or even bimonthly) basis. It has been necessary to publish flying experience information as individual articles.

The *Aviation Digest* prints letters requesting back issues because over the years it has become clear that many readers have missed certain issues for one reason or another. When they read the VFR letter, they find that they have a need for the article they missed and write requesting it. If an *Aviation Digest* article (no matter how or when a reader receives it) can help one person do his or her job better, or if it helps save a life or prevents an accident, it is well worth the time, money and effort required to print the letter. If people have no need to request an article they read about in the VFR column, they can just pass over the letter.

CPT Helfrich's criticism may be the result of what he saw in the March 1986 *Aviation Digest*. There were *two* letters printed that each asked for copies of the same series of articles. Only *one* letter should have been printed.

In the March 1986 issue, the *Aviation Digest* printed CW2 Carlander's letter, which listed back issues he needed, because we do not have any of the requested issues. But, CW2 Carlander's "open letter" request to the field should get him most, if not all, of the issues he needs. Again, if any of the issues he requests help him do his job better it is worth publishing his open letter to the field.

The March VFR also carried a request from a Marine unit asking to be placed on the *Aviation Digest* official mailing list. By printing this letter with its response we have told a lot of other Marine units how to get the *Aviation Digest*. Also, the continued increase in *Aviation Digest* circulation can be attributed, at least in part, to publishing "how to get the *Aviation Digest*" material.

Hopefully this editorial note answers CPT Helfrich's question, ". . . why bother printing all of that?" Indeed, rewards for any bother incurred are great.

Maintenance is the magazine's weakest field. Perhaps a professional CW4, or a sage NCO, could write the *Aviation Digest* a piece incorporating tips, techniques and experiences learned over the years in Army Aviation maintenance. Such an article certainly would be functional to many younger soldiers working in aviation maintenance. The *Aviation Digest* would be happy to receive articles from the 244th as well as other maintenance units.

Editor:

During a recent conference at Ft. Leavenworth, two items of confusion arose concerning joint air attack team (JAAT) operations.

First, the term *air battle captain (ABC)* is outdated; it should be *aviation commander.* Prior to the formation of the Army of Excellence (AOE)

units, the ABC was a viable term. Now that AOE has become a reality and our publications reflect these new organizations, units have caused the ABC to evolve into the *aviation commander.* Although most manuals still refer to the ABC, they will be corrected as they are updated. It will take years to change the field use of the term ABC, but now is the time to start implementing the new nomenclature.

Second, and more important, some Air Force literature has stated: "In order to have a JAAT, a qualified forward air controller (FAC) has to be onboard with the (aviation commander)." We have been debating this issue since 1977 when JAAT started being refined and documented. Whereas having a FAC onboard is far and away the optimum, because of the dynamics of the battlefield and assets available, I believe there will be times that the helicopter folks will have to coordinate the battle with Air Force fighters. We need to train for this reality. Putting the word "mandatory" in any document will stymie the successes we have made in our training, and limit our efficiency in war. The Army should not let this idea get into our doctrine!

LTC R. Dennis Kerr
Author/Instructor
U.S. Army Command and General Staff College

Editor:

A two-part videotape on LAMSON 719 was completed by Educational Television (ETV) at Ft. Rucker, AL, for the Aviation Center's Department of Combined Arms Tactics. It runs about 1 hour and 40 minutes in length.

A copy of the film can be obtained by submitting a DA Form 3903 or Disposition Form (DF) to:

Training and Audiovisual Support Center
ATTN: ATZQ-DPT-TA
Ft. Rucker, AL 36362-5000

Requests should include the title (LAMSON 719), DOD film identification number (2C-011-1235-B and 2C-011-1236-B), unit address, point of contacts with phone number and the requestor's signature. Units requesting a copy from outside the Aviation Center *must* provide two 1-hour, ¾-inch videotapes for copying. Currently, ½-inch videotape copying is not available, but may be in the future. Allow 4 weeks for delivery. For more information contact Mary Tomlin at ETV, AUTOVON 558-4388/6205 (Commercial 205-255-4388/6205).

Also Vietnam veteran aviators are forming a new organization called the Vietnam Helicopter Pilots Association (VHPA), which already has a membership of nearly 2,000 Vietnam-era aviators. The VHPA distributes a quarterly newsletter and has a directory of members that offers additional statistical information, a list of unit call signs, and a list of the aviators who are still missing or deceased as a result of the Vietnam War. There is an annual convention. Annual dues are $20.00. For membership applications and information write to: VHPA, P.O. Box 35699, Phoenix, AZ 85069.

CPT Jim Fulbrook
Ft. Rucker, AL

Articles from the ***Aviation Digest*** *requested in these letters have been mailed. Readers can obtain copies of material printed in any issue by writing to: Editor,* ***U.S. Army Aviation Digest****, P.O. Box 699, Ft. Rucker, AL 36362-5000.*

The Army Aviation Punch Bowl Ceremony printed in the June 1985 Aviation Digest is available for your unit's use in appropriate Army Aviation functions such as dinings-in or dinings-out. Seventy slides support the narration. Each is numbered and keyed in on the side of the manuscript. The Aviation Digest has several sets of these slides and copies of the keyed manuscript for loan. Write the Aviation Digest at P.O. Box 699, Ft. Rucker, AL 36362-5000, and tell us when you need the slides and when you will return them. You can call us at AUTOVON 558-3178 to request the slides. Our commercial number is 205-255-3178. Be sure to allow enough lead time for us to mail the slides to your unit. And remember, when you have used the slides, return them to the Aviation Digest as soon as possible. There may be others waiting to use them.

A matter of re

ecord

...don't take shortcuts, do it by the book...

You people in aviation maintenance have a problem. If you do everything right, the aircraft keep flying, and nobody much notices. But do something wrong, let an aircraft have a mishap as a result, and believe me you won't have to wait to be noticed.

So, how do you prove all the mishaps you prevented by really first-class maintenance done by dedicated people who often do their work under tough-to-miserable conditions? You really can't prove anything, but that doesn't mean you'll stop doing your jobs. Why? Because you're pros, you're proud of your work, and it matters most how you feel about yourselves, that's why.

Even though in this article we're going to talk about maintenance and some of the things that have gone wrong, don't misunderstand us. It's not the vast majority of crew chiefs and mechanics we're talking about. Besides, slinging darts and arrows isn't our purpose anyway. What we want to get across is, don't take shortcuts, do it by the book, and keep the records straight. A simple recordkeeping error can destroy an aircraft or, worse, it can kill somebody. That almost happened in the following incident.

The crew of a UH-60 had been practicing slingload operations. They had completed several flights without any major problems, but that was about to change. The aircraft was on short final with the copilot at the controls when both pilots saw the master caution light come on. The chip detector light flickered, but when the main module chip detector circuit breaker was recycled, the lights went out. Since no more lights came on, the pilots and the crew chief thought it was just a case of fuzz burn. The copilot continued the approach.

The Black Hawk stabilized in a hover about 5 feet above the slingload. Suddenly, the aircraft began a rapid spin to the right. The copilot tried to stop the spin by applying full left antitorque pedal, but the aircraft didn't respond. As the

aircraft continued to spin, the pilot increased altitude to clear the slingload and the riggers who were on top of the load.

The aircraft spun around about four times as it moved to the left rear of the slingload, away from the riggers. By now the pilot and copilot realized they had lost tail rotor control. The PIC, in the left seat, began trying to put the power control levers in the fuel cutoff position to stop the spin. But the centrifugal force caused by the spinning aircraft and the PIC's position in the left seat on the outside of the spin made it difficult for him to reach the levers.

The No. 1 engine was retarded to idle and then to the fuel cutoff position before the No. 2 engine could be retarded to the fuel cutoff position. As the spin lessened, the aircraft, which was now in a left-side-low attitude, hit the ground with great force—but it missed the slingload and the riggers. Only one of the four people in the aircraft was hospitalized.

What had happened? A mechanic had drained all the oil from the tail rotor gearbox to replace an input seal, and he hadn't recorded his work. TM 55-1520-237-7 says that the tail rotor gearbox must be serviced when an input seal has been replaced. But there was no record showing the gearbox had been drained; therefore, the servicing was never done.

The technical inspector is responsible for ensuring that all maintenance work is properly performed and documented. In this case the technical inspector didn't find the deficiency, and the aircraft was released.

The aircrew preflighted the aircraft. The technical manual says the sight gauge has to be visually checked before each flight to make sure there is oil in the gearbox. However, the TM doesn't say the gauge has to be checked at eye level. In this case it was done from the ground, 12 feet away from the sight gauge. The inside of the gauge glass is ribbed, and when it has become stained with oil it can look like it's full when it's empty.

That's what happened this time; the gauge was checked, it looked like the gearbox was filled with oil, but it was empty. The lack of lubrication caused excessive heat and resulted in a tail rotor gearbox seizure. And it all started because the work wasn't a matter of record.

The following near-mishap also involved a UH-60. This time it wasn't an Army aircraft, but that really doesn't matter. It could have cost the crew their lives—all because the work wasn't recorded.

During a pre-runup check of the aircraft 3 days before the mishap, the pilot noticed ratcheting in the flight controls. The flight was cancelled, and the aircraft was red X'd until the problem could be found and corrected. The mechanic on duty went to get a technician to help him troubleshoot the problem. On the way, he met the helicopter manufacturer's technical representative and asked him to help with the troubleshooting.

The mechanic, the flight engineer, and the tech rep all were on top of the helicopter. The tech rep and the flight engineer disconnected the main rotor blade pitch control rod at the spindle horn. The mechanic saw the tech rep remove the upper pitch control rod bolt, but he didn't write it up.

After operating the flight control system through full travel, the group decided the spindle droop stop bearing was dirty. But by now it was shift-change time. The mechanic gave the washers for the pitch control rod to the mechanic on the next shift. This mechanic passed them on to the shift supervisor. Some time later, the supervisor installed the washers on the bolt to keep from losing them. The correct procedure to torque and install a cotter pin was never performed.

Later that evening when the supervisor returned to clear the aircraft for the ratcheting problem, he didn't remember installing the pitch rod bolt. There was nothing in the aircraft's records about the pitch rod being disconnected, and no one who had been there when it was done was around by that time.

The next morning the aircraft's crew chief preflighted the aircraft and found no discrepancies noted. Nothing was in the records about the missing cotter pin and the loose nut on the pitch control rod. The aircraft took off with no one aware that it

might just as well have a ticking time bomb on board.

After about 2 hours of flight, the helicopter landed and was shut down for refueling. The crew chief noticed a nut lying on the ground next to the aircraft. It looked like the kind of nut used on a helicopter's pitch rod.

The rotor system was inspected; the pitch rod was missing the nut, washers, and cotter pin. While the aircraft was in flight, the bolt had worked itself out about one-third of its length. If it had come out completely during flight, the main rotor blade would have become uncontrolled. The helicopter and its crew could have been lost.

If this wasn't an Army aircraft and it didn't cause an accident, why are we telling you about it? Because, sad to say, the same kind of thing did happen to an Army UH-1, only this time the outcome was much worse.

The Huey was scheduled for a test flight following a swashplate change, hanger bearing repack, overspeed governor replacement, and a binding cyclic writeup. A compass swing and fuel control response check were also due. No aircraft or logbook discrepancies were noted during the preflight inspection.

A few minutes after the pilot was given takeoff clearance for the test flight, witnesses saw the UH-1 at a low altitude and heard unusual noises coming from the aircraft. About 10 kilometers from the end of the runway, the main rotor assembly separated from the mast. It began making contact in the vicinity of the tail boom, vertical fin, and synchronized elevators, finally severing the tail boom assembly. Control was lost at this point, and the helicopter began a free-fall descent through trees. The fuselage struck the ground in a tail-low attitude, killing the test pilot and mechanic.

The aircraft had flown with unsecured bolts attaching the cyclic control tubes to the lower linkage of the fore, aft, and lateral hydraulic servo cylinder assemblies. These bolts worked loose, resulting in a flight control disconnect and loss of control over the main rotor system. The complete main rotor system then separated, and the aircraft crashed.

The UH-1 first entered maintenance about 2 months earlier for replacement of the swashplate. However, it was concluded that an open writeup of the binding cyclic control is what eventually resulted in disconnecting the control tubes from the hydraulic servo lever assembly. Analysis of maintenance historical records of other aircraft revealed that similar cyclic control writeups had resulted in troubleshooting procedures that involved disconnecting flight controls to identify the source of the problem.

However, the proper writeups documenting the disconnect of the flight controls had been made for these other aircraft. The records of the aircraft involved in this accident did not contain any writeup on any maintenance form documenting the disconnect of flight controls, as required by DA Pam 738-751. It couldn't be determined who disconnected the control tubes.

When properly installed, the bolts that worked loose are secured with self-locking, castellated nuts and safetied with cotter pins. Tests revealed that if the bolts had been in place at the time of impact, some visible damage would have occurred to both the control tube and the hydraulic servo lever assembly. There was no apparent damage to either.

It was concluded that the nuts and cotter pins were removed from the bolts on the cyclic servos during troubleshooting to isolate the cause of the binding cyclic. No entry was made on the aircraft's maintenance records and, in all probability, the nuts and cotter pins were never replaced. The access panels were reinstalled with only the unsecured bolts connecting the control tube and the hydraulic servo lever assembly.

We've told you about these incidents to emphasize one thing. Document your work. There's not much you can do about the interruptions that sometimes come right in the middle of a job. But if you're always careful to record what you've done or haven't done, somebody else will know, and these kinds of incidents won't happen. Make it a **matter of record.**

PEARL'S

Personal Equipment And Rescue/survival Lowdown

Jacket, Flyer's, Medium Weight (Nomex) and Jacket, CW, Aramid, OG-106

Jacket, flyer's, medium weight, line item number (LIN) L14520, national stock numbers (NSNs) 8415-00-221-8870 and 8415-00-217-7387, authorized to aviation personnel, is being phased out and is no longer being procured. Its replacement item is jacket, cold weather, Aramid, OG-106, NSN 8415-01-074-9413, which will be authorized for combat vehicle crewmen (CVC) and aviators. However, requisitioning by CVC is not yet authorized.

The replaced item, jacket, flyer's, medium weight (Nomex), will be issued to Army aviators until stocks are exhausted. Aviators should continue requisitioning these items in sizes that are available. Automatic substitution of the replacement jacket will be made if assets are exhausted. The replacement item, jacket, CW, Aramid, OG-106, should be requisitioned only if the size wanted is *not available* in the Nomex jacket.

A list of the Defense Personnel Support Center's (DPSC's) (S9T) remaining assets by size is provided for the phase-out item. NSNs are also furnished for the replacement item. Sizes are applicable for both the phase-out and replacement item:

Jacket, Flyer's, Med. Wt. (phase-out item)			Jacket, CW, Aramid (replacement item)
Assets	NSN	Size	NSN
0	8415-00-221-8870	XS-SH	8415-01-074-9413
31	8873	XS-RG	9414
0	8874	XS-LG	9415
0	8879	S-SH	9416
0	8884	S-RG	9417
0	8886	S-LG	9418
0	8920	M-SH	9419
0	8415-00-217-7387	M-RG	9420
0	7391	M-LG	9421
0	7400	L-SH	9427
0	7401	L-RG	9422
0	7402	L-LG	9423
0	7422	XL-SH	9424
0	7423	XL-RG	9425
0	7424	XL-LG	9426

Reprint from U.S. Army Support Activity, Philadelphia, PA, *Supply Digest.*

Helmet, Flyer's, SPH-4, Use of Rubber Edging, Black Neoprene, 10-Foot Length

The Defense Personnel Support Center in Philadelphia has indicated that residual assets of rubber edging, NSN 8415-00-970-9033, previously used on the AH-5/5A/5B, is in excess supply. The Army is a recorded user of this item, which appears in the Army Master Data File (AMDF). In order to maximize drawdown of these residual assets, subject edging was evaluated by the U.S. Army Aviation Systems Command and Natick Research and Developmental Center. The edging was found acceptable for use on the SPH-4 helmet, flyer's, NSN 8415-00-144-4981/4985, and may be substituted for the standard item, beading, edge, rubber, NSN 8415-00-757-8213.

In the interest of economy, usage is recommended until current stocks of subject item are depleted. Funded requisitions should be submitted in accordance with current Military Standard Requisitioning and Issue Procedures to DPSC (S9T).

Unit price for NSN 8415-00-970-9033 is 39 cents and unit of issue is each (10-foot length).
Source: Reprint from *Supply Digest.*

Post and Screw Assembly, Used With Chin Strap Assembly for SPH-4 Helmet

The post and screw assembly, NSN 8415-01-092-5290, is not part of the replacement post and screw assembly, NSN 8415-01-057-3502, and must be obtained separately. Item is local purchase and is not available from depot stock.

DPSC was unable to furnish a valid source of supply for obtaining small quantities due to the high cost of machine setup and tooling required; so, action was initiated to have the post and screw assembly stocked in the supply system. Upon completion of procurement actions, an estimated date of supply will be furnished. Additionally, the acquisition advice code (AAC) on the AMDF has been changed from L (local purchase) to D (stocked). In the interim, if unable to

Dawna Salazar
photo by Benjamin Martel

FIRST AID KIT, GENERAL PURPOSE

1. **Ammonia Inhalation Solution, 10 ampuls**
2. **Compress and Bandage, 2″ x 2″, 4 ea**
3. **Bandage, Muslin, 37″ x 37″ x 52″**
4. **Gauze, Petrolatum, 3″ x 36″, 3 ea**
5. **Razor, Surgical Preparation, 5 ea**
6. **Case, Medical Instrument and Supply Set**
7. **Instruction Card, Artificial Respiration and Instruction Sheet, First Aid**
8. **Povidone-Iodine Solution, ½ oz**
9. **Dressing, First Aid, 4″ x 7″, 3 ea**
10. **Bandage, Gauze, Compressed, 3″ x 6 yds, 2 ea**
11. **Adhesive Tape, Surgical, 1″ x 1½ yds, 3 ea**
12. **Bandage, Adhesive, ¾″ x 3″, 18 ea**
13. **First Aid Kit, Eye Dressing, 1 ea**

procure locally, requisition (DD Form 1348-6) citing AAC 2A in card columns should be mailed to:

Commander
Defense Personnel Support Center
ATTN: DPSC-TSKR
2800 South 20th Street
Philadelphia, PA 19101-3460

The routing identification code is 39T; under "remarks," cite the following:

MIL-H-43925, Drawing No. 8-2-642, Items 9-9 and 9-10

Post ½-inch long
Screw ¼-inch long

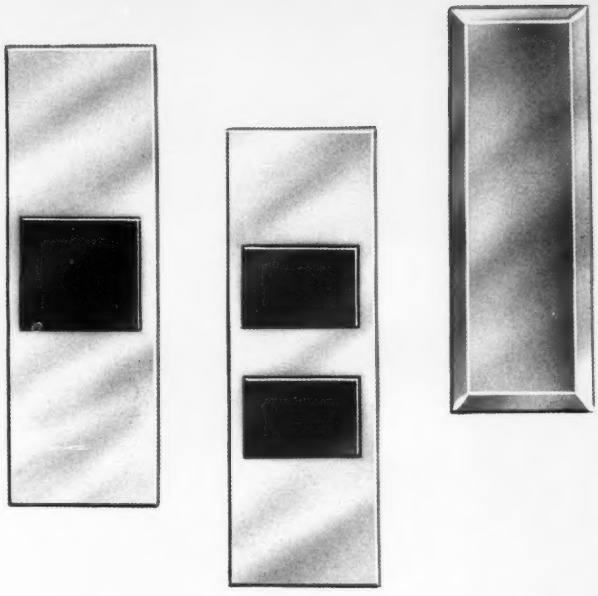
Note: The identification list—descriptive method, cites the incorrect dimension for the post, which is being changed to ½-inch long.

Source: Reprint from *Supply Digest*.

If you have a question about personal equipment or rescue/survival gear, write PEARL, AMC Project Officer, ATTN: AMCPO-ALSE, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798 or call AUTOVON 693-3817 or Commercial 314-263-3817.

MONTHLY WRITING AWARD

THE AVIATION SOLDIER



Is it the Year of the Soldier and the Year of Positive Leadership in your unit?

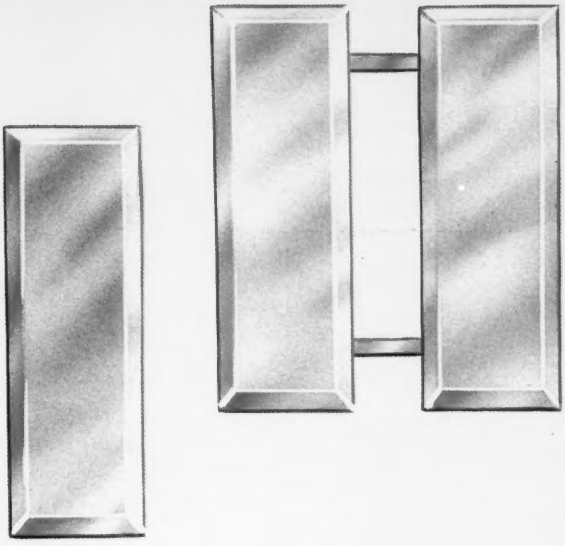
HAVING BEEN an avid reader of this distinguished *Digest* since 1962 and, on occasion, a very undistinguished contributor, I have always considered the *Aviation Digest* to be the best of our service magazines for a number of reasons, principally as a result of the monthly articles devoted toward improving aviation training, tactics, techniques, procedures, maintenance, safety, et al. And, the editor welcomes those types of articles regardless of the source or rank of the prospective author.

However, I find the *Aviation Digest*, as well as other service magazines, guilty in two respects when it comes to articles about leadership and soldiers (and I extend this criticism to the readers, writers and all who are involved in Army Aviation). We appear to habitually overlook, in published articles, the single most important and essential ingredient in the Army Aviation team and – the element that really "makes the team go!"

Colonel Eugene H. Grayson Jr.
U.S. Army War College
Carlisle Barracks, PA

The system can produce and train exceptional commanders and leaders – those who are dynamic, hard chargers; who are successful, produce outstanding words, win unit of the year awards; and who move on to bigger and better things (although one might question whether anything is better than commanding an Army Aviation unit, regardless of size). Decorations are forthcoming; units receive praise and accolades; they have outstanding flying hour programs, exceptional safety records, etc.; and, we write about all of these things in the *Aviation Digest* month after month. However, the bottom line, and one that we must never forget, is that *the soldier* is the key element in making it all happen.

He or she is our most important asset in the detachment, section, platoon, troop, company,



The Key to Your Success!

squadron, battalion, group or brigade. This Army Aviation soldier is the key to all of our successes we have enjoyed throughout our aviation careers and, in reality, is the essential element in most of the interesting monthly articles we read about in this and other service periodicals. Yet, how many of you have ever taken the time to write about exceptional things your soldiers have done, or about successful leadership techniques you may have used that others can benefit from?

You may believe that *it is not* exciting to write about the accomplishments of your soldiers or the leadership principles that make your unit stand out, but that *it is* more exciting to write about aerial gunnery. I argue that this is not the case at all. We write about innovative things that the unit does; however, we don't write about the soldiers who have made innovative things happen in our units.

Thus, this article is for the warrant officers and commissioned officers who are recent flight school graduates, or newly commissioned officers who serve with, supervise and command our Army Aviation soldiers, wherever you may be assigned.

Let me pose some key questions that I hope you have the right answers to:

- How well do you really know the soldiers in your unit?
- How involved are you in their career enhancement or development programs?
- Do you ever take the time to teach, guide and counsel?
- Do you set the right example?
- Is respect a two-way street with you?
- Do your soldiers know they can come to you with their problems?
- Do you take the time to let your soldiers know how much you appreciate their efforts?

While you mull over the above questions, let me say that it may be easy to overlook what the soldier contributes because of mission requirements, day-to-day activities, and in general the rather hectic pace that faces an Army Aviation unit. Yet, in reality, nothing gets done without the soldier; and too often the soldier gets overlooked.

Let's take a brief look across the spectrum of what a typical Army Aviation unit does in the real world and examine the roles your soldiers play in each. We could begin anywhere, but for the purpose of this article, let's start in your motor pool, which often is a dreaded place in an Army Aviation

unit. Furthermore, let's say you are in a large Army Aviation battalion with more than 250 vehicles, trailers and generators. Now, whether we want to recognize it or not, these are absolutely essential elements in any Army Aviation unit; yet, how many of you ever visit the motor pool (unless you are the motor officer) to check on the wheeled vehicle mechanics in your unit, whether you may be in a detachment up to troop or company level? If you do, what you may find is a junior motor sergeant with an understaffed section of young soldiers working extremely long hours in the dirt and mud, and often in a rather cold environment with insufficient space and too many vehicles to maintain in a green status.

However, as long as the vehicles get you and the essentials to the field, what else should you care about? You might consider that it's *your young soldiers* keeping your vehicles in the green and, in all likelihood, also doing one or more other jobs in the unit. Your commanders appreciate the efforts of the wheeled vehicle mechanics because of the myriad of status reports which indicate in very bright colors (red, yellow, green) just how well the unit is doing. Yet, how often have you driven by the motor pool and decided to stop in and check on your mechanics? How many of you drive by on the weekends, when your soldiers are working on your vehicles preparing for an inspection, stop in to let them know you appreciate their efforts and recognize just how important their job is to the unit?

Next, let's look at the barracks, which just happens to be home for most of your young soldiers. How often do you visit the barracks, other than on official business to the orderly or supply room, commander's office, etc.? Do you ever stop by after duty hours and check on your soldiers? Have you ever just sat around and chatted about the Army, their jobs, their families, their problems or their career development? How many of you have ever dropped by the barracks on Thanksgiving, Christmas Eve or Christmas Day, or New Year's Day and talked to your soldiers? Too often, we drive right by the barracks and seldom give a second thought to, "That's where my soldiers live."

Would you be surprised at Christmas time to know that there is a Christmas tree in the dayroom? And on Christmas Day, you might be surprised to know that there will be a consierable number of soldiers close by—because it's home, details must still be performed, or there is just nowhere else to go.

> "Look after the comfort and welfare of the men in every possible way: It is this that builds up and maintains their morale and their confidence in their leaders."
>
> "Winning and Wearing Shoulder Straps"
> *Source Unknown*

How about your Army Aviation refuelers and ammunition handlers? I suspect you will agree that this is a tough, thankless job and particularly so during extended field exercises, gunnery and even during day-to-day activities. Imagine the efforts involved in pumping 35,000 gallons of JP-4 aviation fuel in a single day! Yet, this is not an uncommon amount for an Army Aviation battalion to expend. But, have you ever thought about the long hours and hard work involved? When you zip into a forward arming and refueling point (FARP), refuel and fly away, do you ever think about all the work done by your soldiers to pick the FARP up, move it, set it back up, pump fuel for 24 hours straight; move blivots; and keep up with all of the operational requirements? Do you ever wonder if they are eating as well as you are, or if they are getting their mail like you are? What about their field living conditions? Do they have the same comforts as you do during the field training exercise? Do you ever just stop by and pass on a word of thanks for a job well done?

For those of you in Europe and Korea who probably maintain an ammunition storage area, how often do you visit your soldiers who are working inside the fence all day long and probably even pulling guard details in the ammunition supply point at night? How many of you realize that your ammo soldiers are working long after you have "hit the sack"—during gunnery exercises, breaking down the next day's supply of 2.75 rockets, ball ammunition and TOW missiles? How many of you visited the ammunition supply point (ASP) on Christmas Eve or stopped by there to visit a soldier on his or her birthday? Do you ever just say, "Well, that's the platoon commander's and first sergeant's job?"

What about those soldiers that take care of feeding you? Do you ever wonder about all the work that is required before you go through the chow line, whether in the dining facility, field mess tent, or getting hot chow from mermite cans delivered to a far off laager area? Other than those of you that get appointed as unit mess officer, do you ever think about how early preparation began to ensure that your 0500 hot meal was ready at Grafenwöhr? Your soldiers start working at a rather early hour in order to prepare it, serve it, pack it up, deliver it, etc.—all in time for you to enjoy it. And as you move ahead to the evening meal, those same soldiers are still on duty to ensure you have a hot meal when the last missions are completed, no matter how late in the evening it may be. How many of you take the time to track down the first cook or cook's helper and pass on your sincere thanks for a job well done?

In the communications area, we find that, time and time again, our Army Aviation units consistently maintain the best communications in the division and, on more than one occasion, end up relaying transmissions from the division tactical operations center to other tactical and support units. Additionally, because of the wide dispersal area we must often occupy as a result of tactical and support missions, our communications must be the best. Thus, we have communications officers and outstanding platoon sergeants; but who really makes the tactical communications system work? Take a minute and think about the typical Army Aviation battalion field training exercise (FTX) where units are scattered over a wide area, moving constantly, changing frequencies and call signs, plus performing a myriad of other ongoing activities including operating the division heliport, battalion FARPs, emergency heliport, etc. Well, it's your communications soldiers that make it all work. Why? Because they are professionals and not only do *they know* their jobs, they also *know how* to do their jobs. And, there is too much going on for the officers and even noncommissioned officers to supervise every aspect of aviation communications. Yet, have you ever stopped by the commo shop or the tactical command post and passed on a word of thanks on how well the communications worked that day? Or, have you dropped by the tactical operations center late at night and just chatted with your young soldier who is working the radios during the 2200 to 0600 shift?

"Afterduty leadership is essential! That's where you really get to know your soldiers."

Author

What about your air traffic controllers, who are on duty 7 days a week and on occasion 24 hours a day, and deploy with you wherever you go? When is the last time you stopped in and passed on a word of thanks to that young operator who helped you down during a tough instrument flight rules (IFR) approach? Or the time when you ended up IFR inadvertently and the young controller picked you up; and because of a calm professional approach in talking to you, raised your confidence level

about "10 points" and brought you safely home during absolutely miserable conditions—did you make it a point to stop by and pass on your thanks?

Now, we all will agree that an Army Aviation unit's bread and butter is its maintenance program. How much do you really know about what goes on on the hangar floor; in quality control; in quality assurance; about historical records; about your unit's authorized stockage list (ASL) or prescribed load list (PLL); about how parts are ordered; about flow charts; how much items cost; what your technical inspectors really do; what your armament maintenance really consists of; what's in your technical supply section? Well, spend some time with your soldiers who work in these areas (and many others). Not only will they teach you about things you need to know, but, you also will quickly learn just how good the young soldiers are that do all of these jobs in your unit. The commanders should already know about how good their soldiers are, and unquestionably the maintenance officer does. That leaves lots of room for the rest of you to spend time in the shops and crawling around under the helicopter to see just how professional your soldiers are.

"Men will follow a leader whom they see close to them."

Charles Martin
Publication Source Unknown

All of us can relate back to incidents where a young soldier stood out in some particularly outstanding manner; this is just one of many I can clearly recall. Shortly after taking command of a rather large and still forming combat aviation battalion in Germany, the corps commander "popped in" rather unexpectedly to see how we were getting along. His visit led us to the aircraft maintenance company, and as a result of the normal ongoing events, we were met by a young specialist four who proceeded to take our three star through the ASL and PLL areas. You might be wondering if the battalion commander was looking over his shoulder to see if the senior leadership in the unit was on the way, and you would be dead right if you said yes! However, for this visit, it was the corps commander, the battalion commander (who wasn't up to speed in this area) and the specialist four. Now, this young soldier answered every question with complete directness, took the corps commander through the entire ordering process, showed him the supply bins, matched onhand items in respect to what was authorized, and in general carried on one of the most professional conversations with the corps commander that I had ever seen. This soldier worked for a truly outstanding company commander and the best first sergeant (now command sergeant major) I had ever served with. So, in reality, I didn't have any worries just because the corps commander picked that unit to visit.

The things that I have been asking you if you ever did were a matter of routine in Delta Company; this young soldier was a professional, knew his job and didn't hesitate to let the corps commander know that he was a capable soldier and proud of his unit. The point here is not to amplify this incident, rather, to let you know that you have soldiers just as good as the one in my example; but you need to get down to the hangar, supply, motor pool, etc., and spend time with them. You just might be absolutely amazed at how much you will learn about aviation maintenance—and your soldiers.

How many of you have watched your soldiers in a particularly noteworthy job like changing an AH-1S Cobra engine at night, in December, with a borrowed wrecker and lighting set? Was anyone else there other than the maintenance officer? How about your soldiers who work the night maintenance shifts under sometimes adverse conditions in order

to meet the heavy requirements for the next day?

If you don't already it's time to go out on the line, or to the hangar or other places of duty during afterduty hours (for you), and pass on your personal thanks for the jobs your soldiers are doing.

Write about these things that your soldiers did and are doing in an innovative manner. Let the *Aviation Digest* know how your soldiers set up and run multiple FARPs, how your soldiers maintained a 90 percent availability during a 3-week FTX, or how your motor mechanics implemented a maintenance program that saw your unit pass the dreaded annual general inspection.

Those of you that have successfully passed inspections of all kinds ask yourselves these questions:

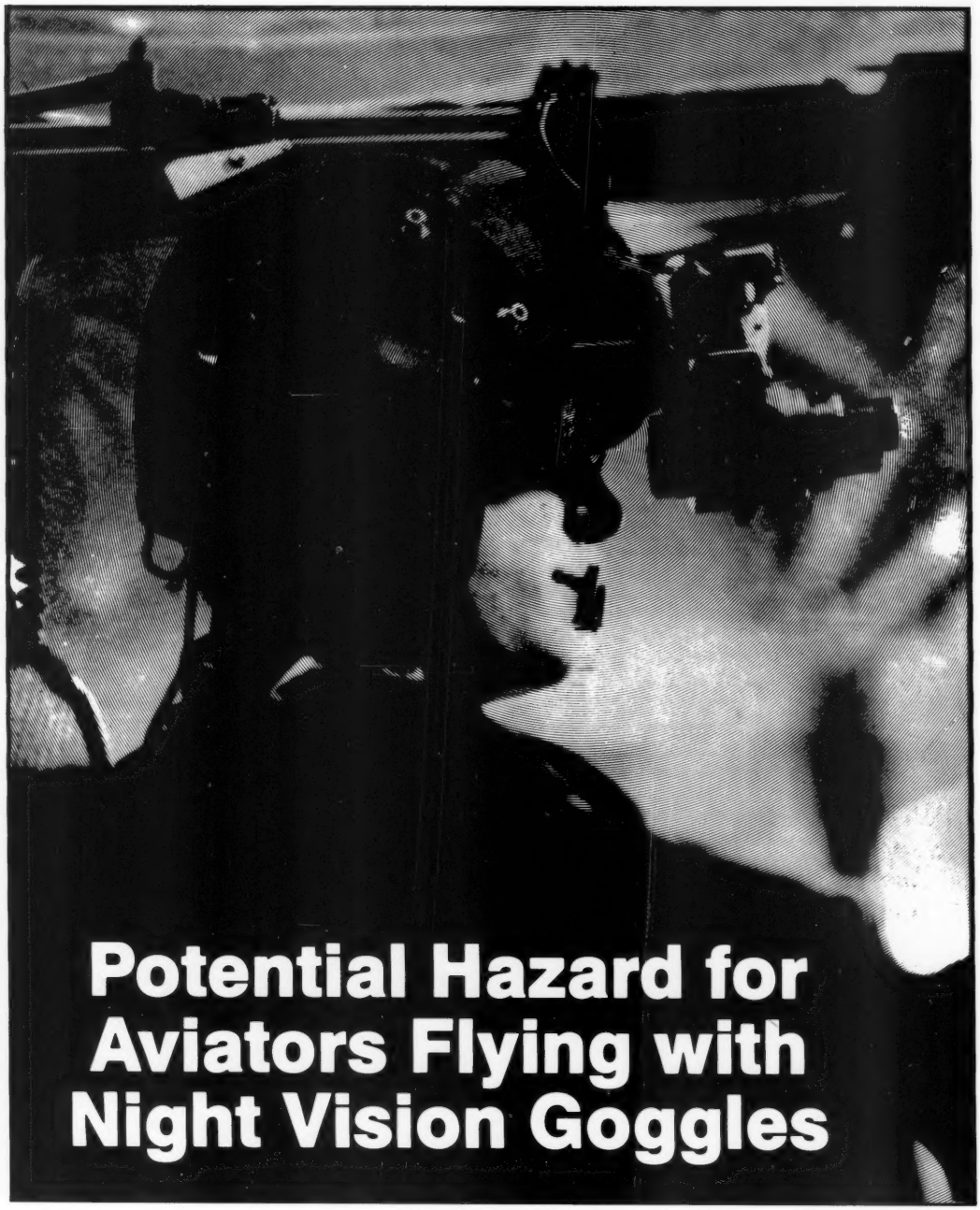
- Who got the generators running and in the green?
- Who fixed the continual leaks in the aviation fuel tankers?
- Who stacked and restacked the hundreds of ammo boxes in the ASP?
- Who spent hours and hours going through the historical records to ensure they were straight?
- Who spent the time going through ASL and PLL cards to ensure requests and items on hand were accurate?
- Who spent countless hours in the motor pool working off the discrepancies on too many vehicles for the motor pool to work on?
- Who worked off the first and second echelon discrepancies on your helicopter?
- Who cleaned and recleaned your protective masks, M-16 rifles, etc.?

How many of you have made a special effort to ensure that deserving soldiers' efficiency reports specifically include particularly outstanding jobs done during preparation for tough inspections or during a lengthy FTX? Do you think that just because you might not be in the chain of command, that you cannot pass it on to the immediate supervisor or endorser? Well, if you believe this, you are dead wrong; and you have an obligation to let those in the chain know about your soldiers' significant accomplishments.

This litany could go on but the bottom line is that your soldiers do all of these things and much more. Why do they do it, day after day, from FTX to FTX, working long hours and often times under pretty austere conditions? Well, *they are professionals!* They *are* proud of their Army and their units! They want to succeed and for their units to succeed. Your leadership, of course, is a key to this effort. Spend time with them—see them in their environment, not yours. Make "Footlocker Leadership" an everyday occurrence with you. Make certain you take time to let them know that they are doing a good job. Make certain those that perform are rewarded upon their departure, just like you are. Fight to ensure they get promoted, that their families are looked after; work with them in career development and future assignments. And for all of you, publicize the things they do well, in an unusual way, in service periodicals like this one. After all, what do we really do that our soldiers are not totally involved in?

> "The greatest leader in the world could never win a battle unless he understood the man he had to lead."
>
> *Omar Bradley*

You know, there is nothing as important to the mission we are charged with as are our soldiers. How we guide, counsel, set the example and spend time with them is a vital ingredient to the success of your Army Aviation unit and our Army. So, the next time you are driving by the barracks on a holiday, take some time and stop by. The benefits gained by you, your soldiers and the unit might surprise you.



Potential Hazard for Aviators Flying with Night Vision Goggles

Dr. John K. Crosley
U.S. Army Aeromedical Research Laboratory
Fort Rucker, AL

THE U.S. ARMY Aeromedical Research Laboratory (USAARL), Ft. Rucker, AL, has been conducting a study for the past year using a new type of spectacle lens material that can prevent eye injuries to aviators wearing night vision goggles. The lens is made from polycarbonate, which has great impact resistance.

Should night vision goggles tubes accidentally be driven toward the eyes, a spectacle-wearer is at risk because the impact-resistance properties of standard issue glass lenses are inadequate. More than 625 aviators who fly with night vision goggles and wear corrective lenses have responded to requests to participate in the USAARL study (see *Flightfax*, 17 April 1985 and 21 August 1985; MG Ellis D. Parker's "Aviation Branch Update Letter" dated 1 October 1985). These volunteers have been furnished a pair of polycarbonate spectacle lenses containing their individual prescriptions.

Recently one of the participants in the USAARL study was involved in an accident which easily could have caused serious eye injury. This aviator is an instructor pilot (IP) who was conducting night phase training during the pilot night vision system aircraft qualification course in the surrogate AH-64 Apache (a specially-equipped AH-1 Cobra helicopter). These instructors are provided with aviation night vision imaging system (ANVIS) goggles which mount to the SPH-4 helmet. When not in use, the goggles are rotated upward for stowage.

In this instance, the aviator had stowed the goggles and was running the aircraft up prior to takeoff. After updating the doppler and leaning slightly forward to read coordinates from his kneeboard, he straightened up. The stowed goggles tubes struck the canopy which caused them to release and rotate downward beyond the normally worn position. The back side of the tubes struck his spectacles forcefully. The goggles then broke away from their mount and fell to the length of their safety cord.

The impact of the tubes on the spectacles was so great that the spectacle frames bruised the IP's face and nose. He stated that if the lenses had been the standard-issue glass material instead of polycarbonate, they likely would have shattered, and he would have received serious eye injury. As it was, the polycarbonate lenses were not damaged in any way and he continued to wear them.

This incident illustrates three important points:

- Aviators wearing standard-issue spectacles and flying with night vision goggles risk eye injury.
- Polycarbonate lenses have greater impact-resistance than glass lenses and provide greatly improved protection from eye injury.
- As the ANVIS goggles are introduced into Army Aviation, aviators should be aware that they may become dislodged from the stowed position by striking something overhead.

The aviator involved in the incident above was of average height (5 feet 10 inches). Taller aviators might be even more likely to encounter this problem. *Note: Both the ANVIS aviation combat developer and the Night Vision and Electro-Optics Center have been notified of this incident.*

National Guard and Army Reserve Instructor Pilot/ Standardization Instructor Pilot Seminars

IN DECEMBER 1985, the External Evaluation Branch of the Directorate of Evaluation and Standardization (DES) assumed responsibility for coordinating the U.S. Army Aviation Center's support for the National Guard and Army Reserve Instructor Pilot/Standardization Instructor Pilot (IP/SIP) Seminars. These seminars are sponsored by the U.S. Armies within continental United States (CONUS) and by Western Command (WESTCOM) for the Pacific regions. All National Guard and Reserve commanders, SIPs and IPs are invited. Commanders have an inherent responsibility to ensure their units are adequately represented. In consideration of the potential benefits available to units through these seminars, it is important for commanders and IPs/SIPs alike to understand the goals that DES is attempting to achieve through this program.

Essentially, there are two primary goals to be achieved through the IP/SIP seminars. The first, which is of the utmost importance, is to facilitate an exchange of information between the Aviation Center and the National Guard and Army Reserve commanders, IPs/SIPs and unit trainers. The second is to provide the type of assistance that is uniquely available from DES resources on aviation related subjects. DES will not conduct evaluations, but will coordinate the necessary support to render assistance in courtesy inspections, give classes/seminars and conduct limited training flights.

Some of the areas DES or Aviation Center subject matter experts can address as topics for discussion, classes, etc., are:

- IP techniques
- What does DES look for during DA evaluations
- What trends are appearing from DA evaluations
- Tactics
- Force structure
- Safety
- Aviation medicine
- Aircraft survivability equipment
- Flight records
- Air traffic control
- Aircrew training manual records
- Aviation field manuals, pamphlets, circulars
- Standardization communications and messages
- Threat
- Gunnery

Additionally, we can obtain support from agencies outside of the Aviation Center in the areas of:

- Maintenance test pilots
- Maintenance test flight examiners

Captain William Weber
Captain Thomas Bagot
Directorate of Evaluation and Standardization
U.S. Army Aviation Center
Fort Rucker, AL

- Maintenance forms and records
- Avionics
- Petroleum, oils and lubricants
- Aviation life support equipment

These lists are by no means all inclusive, so you should not limit your requests to these areas.

Requests for Aviation Center support for the IP/SIP seminars will only be accepted from the appropriate U.S. Army headquarters within CONUS or by WESTCOM in the Pacific. These requests should be addressed to:

Commander
U.S. Army Aviation Center and Ft. Rucker
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U.S. Army Class A Aviation Flight Mishaps

	Number	Flying Hours (estimated)	Rate	Fatalities	Total Cost (in millions)
FY 85 (to June 30)	35	1,124,936	3.11	27	$70.6
FY 86 (to June 30)	23	1,163,903	1.98	21	$49.8

AVIATION PERSONNEL NOTES

Noncommissioned Officer Education System

The Noncommissioned Officer Education System (NCOES) is one of the most important parts of the Enlisted Personnel Management System. Promotions depend on completing certain courses in the NCOES program.

"NCOES provides enlisted soldiers with the best professional development to climb the promotional ladder of success," said Sergeant Major James B. Young of the U.S. Army Military Personnel Center's (MILPERCEN) NCOES.

According to Young, two professional development study groups recently reviewed the program. The Army has adopted many of their recommendations to improve and simplify NCOES.

The NCOES program has been streamlined into four levels, with one course at each level. They are:

- Primary level: Primary Leadership Development Course.
- Basic level: Basic Noncommissioned Officer Course.
- Advanced level: Advanced Noncommissioned Officer Course.
- Senior level: U.S. Army Sergeants Major Academy.

"The *Primary Technical Course* and *Basic Technical Course* were combined and renamed the Basic Noncommissioned Officer Course," Young said.

"Also, the First Sergeant Course and other senior sergeants' courses were moved from NCOES to functional education on 1 January 1986," he continued. A functional course teaches a critical skill needed to perform a specific job, such as that of first sergeant.

At the primary level, effective 1 July 1986, soldiers will have to have completed the Primary Leadership Development Course before they can be promoted to staff sergeant. Sergeants on the staff sergeant promotion list who have not completed the course as of 30 June will be removed from the list. The only exceptions will be soldiers who completed the Basic NCO Course (Combat Arms) before 1 January 1986. They are exempt from this requirement.

Effective 1 October 1986, a soldier must attend primary level training to be eligible for attendance at the basic level.

The basic level of NCOES has two categories:

- The Army major commands manage the Basic NCO Course (Combat Arms).
- MILPERCEN manages the BNCOC (Combat Support/Combat Service Support) under the automated STRAMS-E2 (Student/Trainee Management System-Enlisted Phase II).

"Both courses provide junior enlisted leaders with the leadership and technical training they need to educate and supervise their subordinates," SMS Young explained.

The Army will discontinue the Correspondence Course Program for the Advanced NCO Course, effective 1 October 1986. Soldiers who have been selected to attend the resident course must attend it unless they will have completed nonresident training before 1 October.

Another change at the advanced level requires soldiers to complete the Advanced NCO Course to be eligible for promotion to master sergeant, effective 1 October 1987.

"At the senior level, selection board procedures changed, beginning with the April 1986 board," Young said. "That board selected 500 primary attendees, an increase of 40, for the Sergeants Major Academy. It also selected 100 alternates, a decrease of 50, and 250 soldiers for enrollment in the Corresponding Studies Program, an increase of 50."

The board will determine which primary resident course selectees will attend other service academies.

According to Young, the changes in the NCOES program were made through a coordinated effort by the entire Army, with feedback from privates through generals.

"Everyone had just one goal," Young said, "to provide the best leadership and technical training to our enlisted leaders."

Clearances for Classified Training

Army schools are finding that some soldiers who are scheduled to enter classified training do not have the proper security credentials. According to Colonel Carey P. Joiner Jr., commander of MILPERCEN's Central Clearance Facility (CCF), Ft. Meade, MD, that creates problems for the school and the soldier.

"If a soldier reports for training without the proper clearance, and the CCF cannot clear the soldier in time, the school has only two choices," Joiner said. "It can return the soldier to the home station or omit the classified part of the instruction.

"In either case," he continued, "the soldier is not

adequately trained, which will affect promotions and assignments. Also, valuable training dollars, already in short supply, are needlessly wasted."

It can take several months to complete a clearance action. The process includes unit time to complete paperwork, investigation by Defense Investigative Service, and adjudication—the decision to grant or deny a clearance—by CCF.

Department of the Army (DA) Pamphlet 351-4, "Army Formal Schools Catalog," contains security clearance requirements for every course offered by the Army. If a course calls for a clearance, DA Form 873 at the minimum required level of clearance must be in the soldier's 201 file accompanying the soldier to school.

When the soldier does not carry the 201 file to school, the level of clearance required for the course *must* be documented in the official orders issued for the training.

"Our Customer Assistance Branch at CCF receives panic calls almost daily from Army schools trying to get last-minute clearances for soldiers," Joiner said. "Soldiers are not being properly prepared for movement to their particular training sites."

Security managers with requirements for an immediate response can contact the CCF telephone terminal at AUTOVON 923-7075, Commercial 301-677-7075. The telephone terminal can relay critical cases to the Customer Assistance Branch.

Get Promoted on Time

Being selected for promotion by a DA centralized officer promotion board is half the mission—being *sequenced properly* on the promotion list is the other half. According to Captain Robert Shaffer, chief of the U.S. Army Military Personnel Center's Officer Promotion Section, officers can help to ensure their names get sequenced properly.

"We are managed by a centralized, automated data base," Captain Shaffer said. The officer master file (OMF) contains several key data elements that determine seniority on the active duty list (ADL) and on the promotion lists.

Inaccurate data on the OMF means inaccurate sequencing and promotion delay—and lost dollars. You should pay particular attention, during your birth month and promotion officer record brief audits, to your dates of rank (DOR), active federal commissioned service and entry on active duty. These data, and the following six rules, are the principles that govern your seniority:

- Date of rank in current grade,
- Date of rank in previous grade,
- Total active federal commissioned service,
- Date of original appointment,
- Date of birth,
- Last name, alphabetically.

Here's how these rules apply.

Current date of rank: For first lieutenant and chief warrant officer, CW2, this date is computed at your local personnel office, and is determined by following the rules in AR 624-100. For captains and above, the Officer Promotions Section assigns DOR. The earlier your promotion, the more seniority you have over those promoted after you.

Previous date of rank: If your previous DOR is earlier than that of others who share your current date of rank, then you are considered senior to them.

Active federal commissioned service: This amounts to the total number of months (first three digits) and days (fourth and fifth digits) of active federal service as a commissioned officer or warrant officer in any service. It is computed annually at the beginning of each fiscal year, to reflect the total number of months and days served as of the end of the next fiscal year. Unless you have had active duty for training credit, previous warrant officer service, or received an interservice transfer, your active federal commissioned service should account for all time served from your current entry on active duty (to include travel time if you are a reserve officer) through the end of the current fiscal year. If you share the same current and previous dates of rank with other officers on the promotion list, you are senior to others if you have more active federal commissioned service to your credit.

Date of original appointment: This is the date you took your oath of office and accepted your commission as an officer. You can verify your date of appointment by referring to the certificate (DA Form 71) you signed at your commissioning ceremony. The date of your original appointment should be the date you signed the form. If you have equal dates of rank and active federal commissioned service with other officers on a promotion list, you will be senior if you took your oath of office on an earlier date.

Date of birth: This item is simply your birthday expressed in a six-digit fashion. If you are older than those officers on the promotion list with whom you share identical dates of rank, active federal commissioned service and dates of original appointment, then you will be sequenced above those officers by virtue of your age.

Alphabetically by last name: This simply means that last names are sequenced from "Aa" to "Zz" when all other sequencing factors did not break a tie.

Captain Shaffer emphasized that sequencing factors five and six do not apply to officers who receive their commissions from the United States Military Academy. "All who are graduated from West Point on the main USMA graduation date are sequenced in order of their final class standing," he added.

67N Maintenance 67Y Specialization — 67V A Combat Multiplier, or a Combat Inhibitor?

Major (P) Stephen J. Snow
Commander
and
CW3 Gerard F. Franklin
Quality Control Officer
E Company, 4th Aviation Battalion
Fort Carson, CO

THROUGH THE years Army Aviation has sought to increase efficiency, production and the quality of its maintenance through specialization. One of the techniques used to accomplish this is the "narrow ranging," or specialization, of mechanics, technical inspectors (TIs) and supervisors. Currently, repairers are classified by type aircraft. The 67Ns perform maintenance on UH-1 Hueys, as do 67Ys on AH-1 Cobras and 67Vs on OH-58 Kiowas, just to cite a few common examples. Accordingly, the role of TIs has evolved from 67Ws, rotary wing TIs and 67Fs, fixed wing TIs to specialization as with repairers—by type aircraft. This specialization philosophy, also referred to as narrow ranging, reduces the span of knowledge required in hopes that repairers and TIs become experts in one area rather than knowledgeable "jack-of-all-trades" in many areas.

Unfortunately, narrow ranging has created inflexibility relative to maintenance requirements within Army Aviation units. Peacetime operational readiness suffers and wartime preparedness and sustainability are greatly reduced. What may be workable in the civilian labor force may have limited application in a combat force that requires inherent attitudes and capabilities of flexibility, adaptability, initiative and innovation to produce winning results on the modern battlefield.

Army Aviation units must operate at a rapid pace to successfully complete requisite assigned missions, train for war and maintain an acceptable readiness posture. The maintenance program not only must be capable of reacting rapidly to unforeseen happenings, but also must maintain the aircraft in a manner that achieves maximum safety and quality products.

Excessive specialization of the military occupational specialty (MOS) structure hinders rapid reactions. Due to the many mission distractors found in all units, maintenance officers almost always find themselves having less than 100 percent of the unit's potential work force. Unit personnel shortages because of leaves, CQ (charge of quarters), guard duty, drivers training, rifle ranges and details are a few examples of how the work force is eroded on a daily basis. Consequently, the maintenance program never enjoys that ideal state of having "present for duty" all of its narrow range repairers and TIs. This fact has a significant adverse impact on readiness, both in training and on equipment availability.

A short story might help bring this allegation to light. On a given day, a unit maintenance officer finds himself with several AH-1 Cobra deadlines—one in phase maintenance, one for unscheduled maintenance and another needing troubleshooting due to discrepancies found on a preflight inspection. The maintenance officer quickly looks around and finds that he has one 66Y AH-1 TI, two AH-1 mechanics, one 66V OH-58 TI, three OH-58 repairers, one 66N UH-1 TI and five UH-1 repairers. This maintenance officer has total sufficient assets with which to deal with the problem, but given the narrow ranging manning approach, he only has one Cobra TI capable of checking the maintenance of the two 67Y repairers on the three aircraft, even though the other TIs and repairers might be idle for some reason or other. This maintenance officer is constrained. He has no flexibility. He must use the narrow range specialist in the area in which he was trained. Thus, a slowdown in maintenance, and obviously in readiness, occurs. The maintenance officer can't fix it for want of a specialized "proverbial nail."

The situation outlined above may sound exaggerated; but, it happens with an uncommon frequency. Unit maintenance officers need versatile mechanics, supervisors and TIs so that they can have the flexibility needed to react to the unexpected. The capability, of course, would be essential in a wartime situation where one can always expect the unexpected.

In the not too distant past, aircraft repairers were classified as single engine aircraft and multiengine aircraft repairers. This meant that mechanics were trained to perform maintenance on several types of

This article expresses the views of the authors and does not necessarily reflect those of the Department of the Army nor any of its agencies.

aircraft in the inventory. Consequently, their scope of knowledge allowed them to perform many varied maintenance operations on different types of aircraft. This gave flexibility to maintenance officers. In addition, it also provided a significant training base from which Army Aviation could "grow" experienced TIs and supervisors.

Today there are soldiers in supervisory positions trying to supervise aircraft maintenance operations on aircraft that they have no experience with nor knowledge about. These supervisors have been deprived of a broad based learning environment because of tracking, or being expected to be narrow range. The 67Z sergeant first class aircraft maintenance senior sergeants of the past had the necessary experience to supervise the maintenance of all types of aircraft because of their exposure to them during their developmental years in aviation. These experienced supervisors were, collectively, an integral part of our maintenance program. They provided flexibility and significant training for the development of subordinates.

The most adverse impact of MOS specialization is found in Army Aviation units' quality control sections that are staffed with narrow range TIs having the new 66 series MOS. This means that TIs who may be knowledgeable of maintenance practices and procedures, and all aspects of quality control, are restricted to one type of aircraft; the quality control section loses significant flexibility and experience.

Why not permit these highly motivated professionals to expand their capabilities by permitting them to inspect all types of aircraft found in the unit? By training TIs on multiple types of aircraft they would become more versatile. The added scope and depth of knowledge would provide flexibility that would greatly enhance the aviation maintenance program.

Narrow range specialized TIs who can't inspect the installation of main rotor pitch-change links or common safeties because their MOSs do not cover a particular aircraft have no business being on the battlefield in a wartime environment. Similarly, being at war is not the time to begin a maintenance training program due to the existence of a significant training deficiency. Army Aviation units must train in peacetime to provide depth for aviation maintenance in a war. This need becomes more critical as Army Aviation aircraft become more sophisticated.

Some narrow range or specialization proponents contend that there is nothing to prevent each unit from cross-training its TIs and mechanics (which most units do now for survival) so that they would be available for general use maintenance on other aircraft. While this is true, the contention and its practice begs the question, "Why not school train soldiers for the general use for which they ultimately will be needed?" Certainly a school environment could produce better trained soldiers than those produced by a unit on-the-job training program.

It would be to the betterment of Army Aviation to make general mechanics "general again." They should be educated on theories and concepts of aerodynamics and basic flight engineering in a school environment. This will give aviation maintenance officers flexibility in peace and in war.

War generates uncertainty and the unexpected. Victors learn to reduce uncertainty and to expect the unexpected. Further, victors are not slaves to lockstep methodologies. Army Aviation maintenance must be flexible and responsive to combat needs; aviation maintenance thus becomes a true combat multiplier.

Article notes: The U.S. Army Aviation Logistics School, Ft. Eustis, VA, advises that several studies are currently in progress for MOS consolidation of all like specialties within the U.S. Army. An example of this is the Electronic Maintenance Structure Study, which is looking into the feasibility of consolidating various MOSs that deal with electronic maintenance into one MOS that is a general electronic maintenance repairer capable of working on more than one type of equipment in the Army inventory. This is in line with the author's suggestion that aviation maintenance repairers be given an education in general maintenance, theories and concepts as opposed to specializing in a specific aircraft or component repair. Additional initiatives aimed at maximizing the use of common tasks include the Frietag Study (a study to improve the quality of maintenance in Europe) and a U.S. Army Training and Doctrine Command sponsored MOS Consolidation Study.

The *Aviation Digest* also noted in the 7 April 1986 issue of *Defense News* (page 14) that service analysts are projecting that in the future the U.S. Air Force will have to be more mobile and less centralized to operate and survive in high threat environments. Colonel Donald C. Tetmeyer, chief of the Logistics and Human Factors Division of the Human Resources Laboratory, Brooks Air Force Base, TX, is quoted by *Defense News* as saying ". . . the Air Force will not be able to afford the present level of specialization in its work force. Since several types of airplanes may be operating from one forward air base, the Air Force will not have enough manpower to provide a specialist for each type of aircraft. They will have to know even more about repairing different types of planes than they do today."

Readers' comments, or articles, concerning this article on Army Aviation maintenance specialization or decentralization are welcome. Send them to *Aviation Digest*, P.O. Box 699, Ft. Rucker, AL 36362-5000.

GOAL – $2,500,000
AUGUST 1986 – $2,050,000 cash and pledges

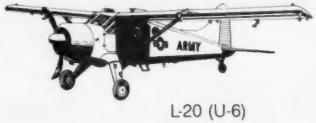
Army Aviation MUSEUM

This is a series about the Army Aviation Museum Foundation fund drive. Currently, plans call for building a modern complex to house your Army Aviation Museum. Since last month additional donations have been received. However, we still have a ways to go, as the barometer above shows. If you would like to help "build" the Army Aviation Museum's new home, you are invited to send a tax deductible contribution to: The Army Aviation Museum Foundation, Box 610, Ft. Rucker, AL 36362-5000. If you desire additional information call Mr. Ed Brown at (205) 598-2508.

A Look At What's In Your Museum

Designed by the de Havilland Company of Canada, the DHC-2 was the second non-U.S. design aircraft purchased by Army Aviation in quantity since World War II. The company won a competition in 1951 for an Air Force/Army Aviation purchase of a new liaison aircraft. In summer of 1951 Army Aviation purchased four of these airplanes and designated them YL-20 and later L-20 Beavers. By the end of 1960 some 968 L-20s had been delivered to the U.S. armed forces. Army Aviation made extensive use of the L-20s in the early 1950s especially during the Korean War. It was used with skis or floats on a worldwide basis.

The L-20 on display was the first one purchased by the Army and has more than 10,000 hours on its airframe and is appropriately named "Ole Maude." It is equipped with an auxiliary fuel tank underneath the fuselage. This aircraft was transferred to the museum in 1971 from Carlisle Barracks, PA. The L-20 series aircraft was redesignated U-6 in 1962.



L-20 (U-6)

STRIKE DEEP AND WIN!

photo by Tracy Baker

Colonel Marvin E. Mitchiner Jr.

In an exercise labeled Eagle Soar, the 11th Aviation Maneuver Brigade's (attacking forces) dual mission was to employ deep and destroy two bridges along the Rhein-Main-Donau Canal and restrain opposing forces by denying possible reinforcement. Lessons learned from Operation Eagle Soar, in spite of weather restrictions, proved the corps aviation maneuver brigade to be swift and served as a valuable tool in planning future deep attack missions.

UNDER THE ARMY of Excellence concept the United States Army is in the process of forming aviation brigades in each active duty division and corps. The corps aviation brigade will be the corps commander's organic combat asset to fight the deep battle.

The 11th Aviation Group of the VII U.S. Corps will be converted to the VII Corps Aviation Brigade in fiscal year 1988. It has been preparing for this conversion, with its large increase in troops and helicopter assets, for some time now. In each field training exercise and command post exercise, the group is structured and exercised as a corps-level aviation maneuver brigade. This is done not only to learn

to better operate and employ this new organization, but also to educate fellow combat arms members about the tremendous combat capability of this new organization.

The deep attack conducted by the 11th Aviation Brigade during the last REFORGER (Return of Forces to Germany) was dubbed Operation Eagle Soar. The situation was basically as depicted in figure 1. The 11th Aviation Brigade was a member of the Orange corps forces that were attacking west across the international border.

The brigade's mission (figure 2) was to destroy two bridges along the Rhein-Main-Donau Canal (about 70 km deep across the forward line of own troops (FLOT)); to delay withdrawing Blue forces by denying them rapid crossing points along the canal. The intent also was to deny possible reinforcement of the Blue units across these same crossing points.

Although this mission was received 72 hours prior to the designated execution time, the brigade had been anticipating deep employment for more than a week. While the subordinate battalions had been reinforcing the front line division in the attack, the brigade planning staff was busy identifying possible targets and missions based on the corps commander's stated intent for the conduct of his battle plan. Priority information requirements (PIR) lists had been developed and the corps G2 assets were already gathering this information. When the mission was received, the PIR list was refined and additional information requested. The corps deep battle planning cell began work on the suppression of enemy air defense (SEAD) operation. Assets used included F-111 Ardvark, EC-130 Compass Call, RC-12 Huron, RV-1D and OV-1D Mohawks and EH-1H Huey aircraft. Our brigade Air Force liaison officer also began requesting battlefield air interdiction (BAI) sorties for use in the objective area and en route. The brigade fire support officer began developing his plan for coordinating artillery fire at the crossing point and en route to the objective. (The brigade had been given priority of fires within the corps during the FLOT crossing times.)

Intelligence had estimated the enemy defenders to be one company of local reserve infantry forces on each objective. It was estimated that the enemy had the capability to reinforce either objective within 1 hour with battalion-sized mech/armor forces or with helicopter forces. Of course, it was impossible to determine the exact location of all enemy forces displayed in the order of battle or what their locations would be in 72 hours. In fact, the FLOT had moved by H-hour to a line west of Grafenwöhr.

The brigade tailored its forces for this mission as shown in figure 3. The total package consisted of two lift battalions of CH-47 Chinook and UH-60 Black Hawk helicopters; an attack battalion of AH-1 Cobras and OH-58 Kiowa scouts; two light infantry companies; two TOW light antitank (TLAT) infantry companies, an engineer company, four air defense Stinger teams and an airborne pathfinder platoon. Each task force was assigned the mission to destroy one of the bridges and to provide an early warning screen to the east side of the canal (figure 4).

The attack battalion was given the mission to first attack the target with rockets and 20 mm cannon fire and then to establish a screen on the west side of the canal to provide early warning and to delay entry of enemy reinforcements from the west to the objective area during the mission, with an oncall mission to provide fire support to each task force. They also were given two CH-47s to establish a forward arming and refueling point. Long-range reconnaissance patrols and pathfinders were inserted 48 hours early to observe and report enemy activity in the objective area.

The mission was to be conducted in four phases:

- Stage for the attack.
- Penetrate enemy lines.
- Attack and destroy the objective, first by the attack battalion, followed by the two task forces.
- Return across the FLOT.

The attack was launched at 0500 hours, using night vision goggles.

Mobile TOW missile teams from the TOW light antitank company race toward avenues of approach near the bridge objectives.

photo by Tracy Baker

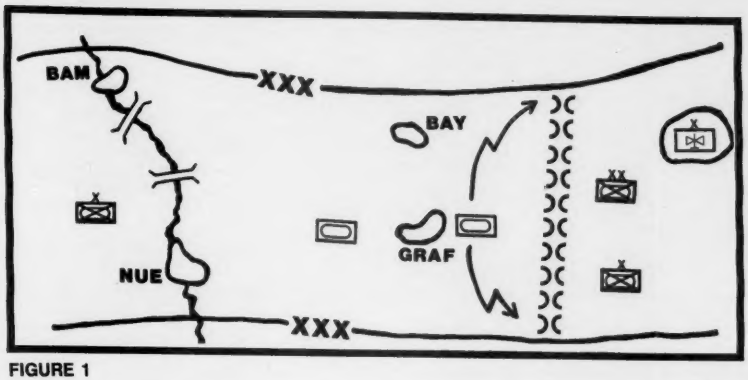


FIGURE 1

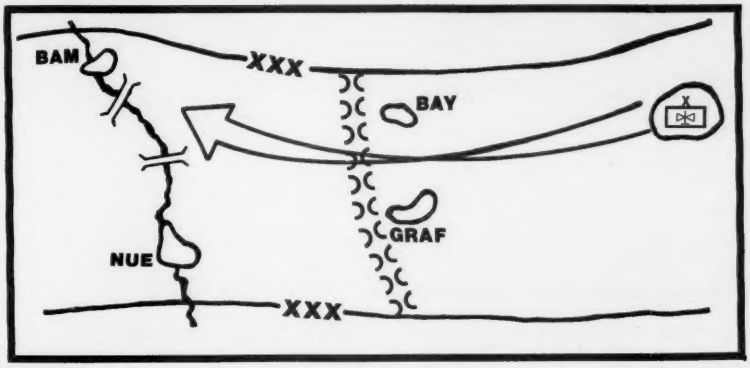


FIGURE 2

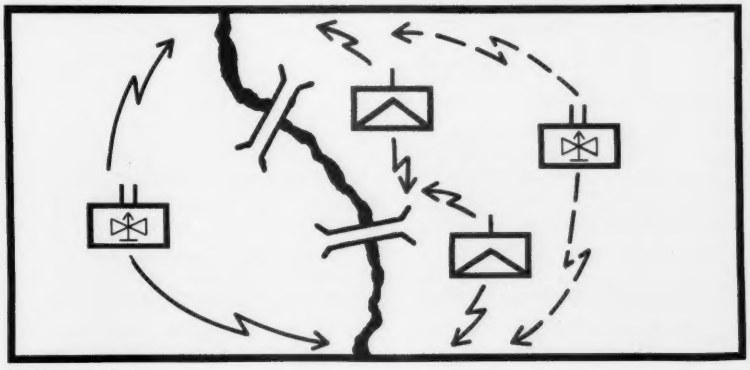


FIGURE 4

TASK FORCE 11

11th Aviation Battalion

1 TOW Light Antitank Co.

1 Infantry Co.

1 Engineer Plt.

1 Pathfinder Team

TASK FORCE 223

223d Aviation Battalion

1 TOW Light Antitank Co.

1 Infantry Co.

1 Engineer Plt.

1 Pathfinder Team

3D ATTACK BATTALION

2 Pathfinder Teams

2 CH-47s

FIGURE 3: Task Organization.

Landing Black Hawks at bridge site "Bob."

photo by Tracy Baker

photo by SGT John Haynes

LEFT: Incoming flights of Orange Forces Black Hawk assault helicopters pounce on unsuspecting Blue defenders at bridges spanning the Europa Kanal near Bamberg, Germany.

photo by SGT John Haynes

An H-hour sequence timed the supporting fires and SEAD activities for the actual crossing operation, while a diversion plan attracted enemy attention to the south.

Penetration points, routes, phase lines and release points had been developed for each task force. Intelligence updating was continual. Based on the complex nature of the operation, command and control was exercised from the brigade UH-1 command and control helicopter. The mission was planned for a total ground time in the objective area of not more than 1 hour. All forces were scheduled to return across friendly lines prior to first light.

Due to peacetime safety restrictions, and since we were operating in the air defense identification zone, weather criteria were established for launching the mission as 800 foot ceilings and 2 miles visibility. Ideally, no helicopter would be higher than 100 feet above the trees en route.

Unfortunately, the weather did not cooperate. At the weather decision time (4 hours prior to launch) there were less than 300 foot ceilings and ½ mile visibility. Since so much training time had been put into planning the mission, permission was received to execute during daylight hours.

Based on the forecasted weather, an 8-hour delay was approved and the mission was rescheduled for 1300 hours. Even though this was not tactically sound, tremendous training benefit could be gained from executing the plan. The actual weather at launch time was terrible. Snowstorms and low ceilings in the launch area prevented one flight of CH-47s from taking off. Other flights were having difficulty following their routes to their designated penetration points and had to divert to new routing. Fortunately, each task force had been directed to take a redundant explosives capability to destroy their bridge. All battalions crossed the FLOT on their revised schedule and proceeded to the objective area.

The German police cooperated superbly and, at no small effort; they sealed from civilian traffic all roads and highways leading into both objective areas. This included the major highway 505 from Bamberg to Bayreuth that crossed the northern objective bridge.

En route to the objective area the battalion commanders reported by codeword crossing phase lines, to assure a coordinated attack on the objective. Intelligence was continually updated by airborne intelligence assets of the corps military intelligence brigade and by tactical satellite from the command and control aircraft to the corps area security information center. When the flight leads of the attack battalion reported their release points, pathfinders monitoring the command frequency from their observation points in the objective area gave updated intelligence about the enemy situation on the bridges. Each bridge was reported to be defended by an estimated company of reserve infantry with small arms and light machineguns.

The attack and air assault proceeded as planned. The attack heli-

RIGHT: Setting the charges, winter camouflaged engineers from the Blue Forces stack mock explosives on a Bundesstrasse 505 water crossing. The destruction of the bridge slowed the Blue retreat during the first week of REFORGER '86, Certain Sentinel.

BELOW: Flying into the sunset, three UH-60s from the Orange Forces wing their way from the objective. The Black Hawks of Task Forces 11 and 223 delivered enough troops and materiel to destroy two bridges deep in Blue Force territory.

photo by SGT John Haynes

copters fired flechette rockets and 20 mm cannons as they passed over the objectives. Demolitions had been placed on each objective and were properly rigged; a signal was given when the bridge was properly prepared for destruction. Within 25 minutes each engineer platoon accomplished its mission and the extraction helicopters were called from their laager (holding) sites. The extraction was accomplished within 6 minutes of initiating this call.

The attack helicopter screen had picked up and engaged enemy aircraft moving into the objective area. They denied entry and were credited with two helicopter kills. The oncall BAI (German F-104s) were not used in the objective area and expended their munitions on another target of opportunity.

The return flight was uneventful. Although medical evacuation and maintenance recovery aircraft were on standby, they were not called into action. Total assets crossing the FLOT were 47 helicopters, 18 TOW/scout vehicles and 325 soldiers. Total combat losses assessed to the 11th Aviation Maneuver Brigade by the umpires for the operation were 4 UH-60s that stayed in one landing zone too long (more than 60 seconds) and 17 of the attacking infantry forces. Also, one TLAT jeep and crew were left in the objective area when they failed to meet their CH-47 at their designated pickup point on time.

This is only a brief picture of an extremely complicated and detailed operation. Not everything went smoothly. We learned many lessons to help us conduct our next deep attack mission even better. However, the exercise did demonstrate that the corps aviation maneuver brigade, swift and powerful, can strike deep and win!

ABOUT THE AUTHOR

Colonel Mitchiner commands the 11th Aviation Group (Combat), VII Corps. He is a daul rated Master Army Aviator, Master Parachutist and is Ranger qualified. He is a graduate of the Infantry Advanced Course, the Command and General Staff College, civilian graduate school at Georgia State University, and the Army War College.

PUT A LITTLE LIGHT ON THE SUBJECT

photographs by Mitch Caylor

CW4 Charles F. Koranda
Wisconsin Army National Guard
Truax Field
Madison, WI

Night flying has its own unique problems. Now, there is "ET Finger" to the rescue to shed light in a dark situation.

ANYONE WHO HAS flown a tactical night mission, either aided or unaided, has experienced the increased difficulty performing tasks such as finding circuit breakers, switches, tuning radios, etc. CW4 Chuck Beatty and I, both night vision goggles (NVG) standardization instructor pilots, have taken this problem to task.

Over the past years we have developed several types of light aids. The latest version gives new meaning to the old saying, "put a little light on the subject." It has features of being NVG compatible, self-contained on one finger, red or green light capable without changing filters and being turned on or off by flexing a finger. In deference to Mr. Steven Spielburg's Trademark rights, this device has become known as an "ET Finger." Unlike its namesake, it does not have magical powers; but it does make life easier for those of us who work in the dark. This article presents the construction of this light as a do-it-yourself project. Anyone having basic soldering skills should be able to complete the project in several hours for under $8. As part of the instructions I have included a materials list (figure 1). This list gives a radio store's catalog numbers for the electronic components. This is not an endorsement for any particular firm. It is intended as a reference to identify the components. These components could be purchased in most radio or electronic components stores. The elastic and bra hook can be found in any sewing store. The adhesives are the ones I found to work the best, and since they are available through the supply system, the national stock numbers are given, or they can be purchased at a hardware store.

With any project of this type the end result is a function of the quality of workmanship that goes into it. To avoid learning some lessons the hard way I offer the following suggestions. When soldering use small diameter solder, a noncorrosive flux and a pencil-type iron with a low heat setting. Tin (precoat with solder) all connections before joining. Following these steps may take more time, but will result in better solder joints and lessen the chance of damaging the electronic components. Before doing any glueing or potting, clean all flux residue from the area to be glued. Alcohol works well for this purpose.

Figure 2 is a construction wiring diagram which shows a top view. The routing of wires is shown by the use of heavy lines. Dashed lines are used where the wires run under components. Large dots indicate solder connections. From this diagram it may be apparent that a four-gang dipole (DIP) switch is more than is necessary. The switch was chosen because of its small size, and it was not available in a two-gang version. Figure 2 also shows the directional orientation used in the instructions. The top of the diagram is the front of the light, the right side is the right referred to in the instructions, etc.

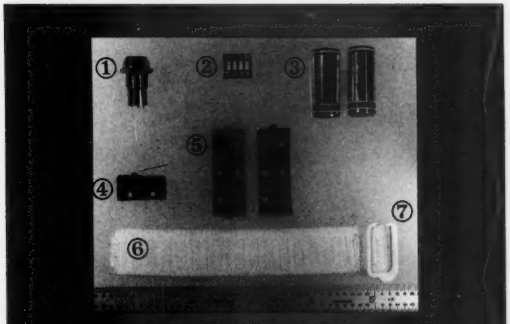
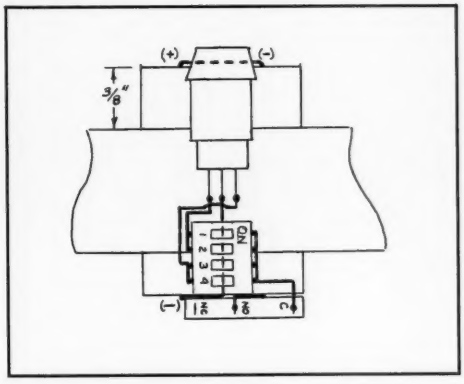


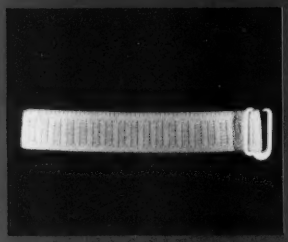
FIGURE 1: Materials List

① One 2-Color LED with Holder, Red/Green
② One Miniature 4-Position DIP Switch
③ Two "N" Cell Batteries
④ One Subminiature SPDT Lever Switch
⑤ Two "N" Cell Battery Holders
⑥ One ¾-Inch Wide Nonroll Elastic 5½-Inch Long
⑦ One ¾-Inch Bra Hook

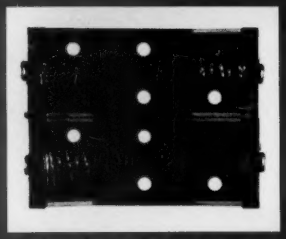
Also needed but not shown:
Goodyear Pliobond Adhesive, NSN 8040-00-764-4424
Cyanoacrylate Adhesive, NSN 8040-00-142-9193
Clear 5-Minute Epoxy
22 or 24 Gauge Single Conductor Solid Wire

FIGURE 2

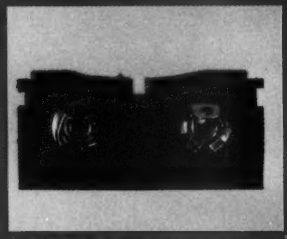




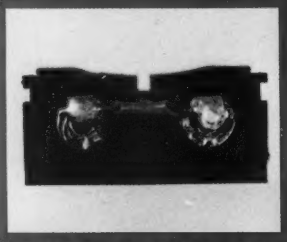
STEP 1: Using a sewing machine with a zig-zag stitch, stitch across one end of the elastic. Loop the other end of the elastic through the center of the bra hook and sew the elastic together. When sewing the elastic together use the minimum amount of overlap allowed by the machine foot.



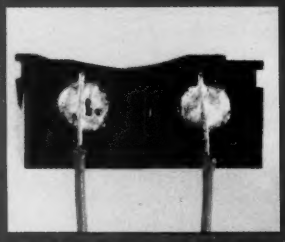
STEP 2: Arrange the two battery holders, open side down, so the terminals are as shown in figure 2. The negative terminals are the ones with the springs. Using the cyanoacrylate, cement the two battery holders together.



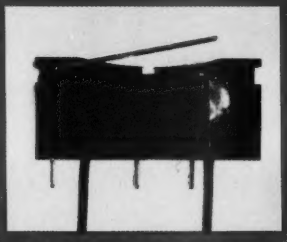
STEP 3: After the cyanoacrylate has set, turn the battery holder assembly open side up. Using a half-round file remove enough material on the ends to give them a slightly concave shape. Leave about 1/16 inch of plastic around the battery terminals.



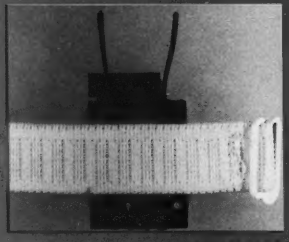
STEP 4: Care should be taken during this and the next step to avoid melting the plastic around the battery terminals. On one end of the battery holder assembly, solder a wire connecting the positive and negative terminals.



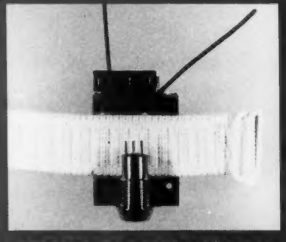
STEP 5: On the other end of the battery-holder assembly solder one 2-inch length of wire to each battery terminal. The wires should be attached so they rise vertically when the battery holder is placed open-side down. The wire on the negative terminal should be soldered on the right edge of the terminal. It will act as a spacer for the lever switch.



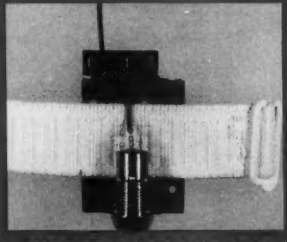
STEP 6: Using the 5-minute epoxy, cement the lever switch to the battery holder. The switch is cemented over the wires attached in step 5. The switch should be positioned with the lever facing down when the battery holder is placed open-side down. The hinge point should be to the right side. Finally the right side of the switch body should line up with the right side of the battery holder and the top of the switch body should line up with the top of the battery holder. Allow the epoxy to set 20 to 30 minutes before proceeding.



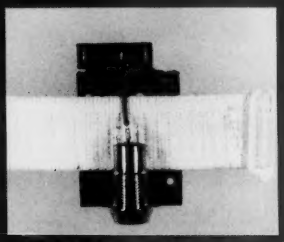
STEP 7: Following the instructions on the container, attach the elastic strap to the battery holder using the pliobond. The forward edge of the strap should be positioned as shown in figure 2. The side on which the buckle is placed is personal preference. I have found the strap works best if the nonbuckle end extends about 2½ inches past the edge of the battery holder.



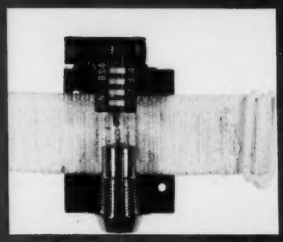
STEP 8: Remove and discard the nut and washer from the LED. Trim the LED leads to about 3/16-inch long. Using the 5-minute epoxy attach the LED to the top of the battery holder. The LED should be placed so that it is level with the top of the battery holder and the three leads are horizontal when the battery holder is open-side down. Allow the epoxy to set 20 to 30 minutes before proceeding.



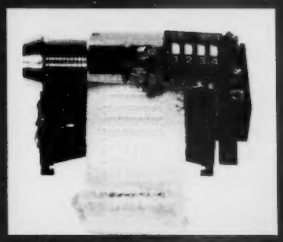
STEP 9: Trim and solder the wire from the negative battery terminal to the center lead of the LED. This wire should be routed exactly as shown in figure 2 and kept in contact with the battery holder because the DIP switch will straddle it.



STEP 10: Trim and solder the wire from the positive battery terminal to the terminal marked NO, on the lever switch.

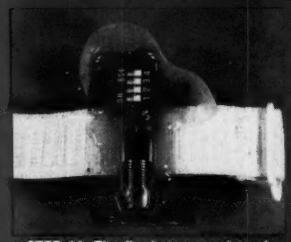


STEP 11: Solder one end of a 2-inch piece of wire across the four right hand terminals of the DIP switch as shown in figure 2. Trim the other end of the wire and solder it to the C terminal of the lever switch. This should be accomplished in a manner that will allow the wire to hold the DIP switch in position.



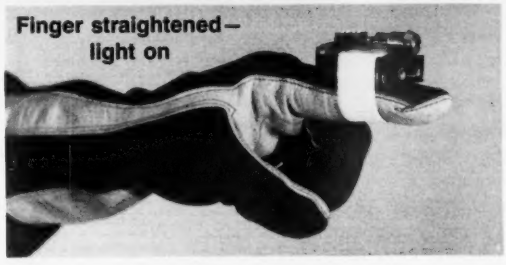
STEP 12: Complete the rest of the wiring by soldering the two wires from the left side of the DIP switch to the LED.

STEP 13: Before proceeding further, check the operation of the light. Turn all four switch elements in the DIP switch off. Insert two batteries. Turn segments one and two of the DIP switch on. Close the lever switch; the LED should illuminate red or green. Release the DIP switch, turn segments one and two off and three and four on. Close the lever switch and the LED should illuminate the other color. If this test does not work check battery polarity, check for and repair any short or open circuits. Before proceeding to the next step remove the batteries.



STEP 14: The final step consists of potting all the components in epoxy. Use tape applied to the sides and back of the battery holder and lever switch to form dams. This will keep the epoxy from flowing over the sides. Next mix a small amount of 5-minute epoxy. Using a small stick, dribble it in and around the components. Apply a small amount of epoxy and let it set just until it no longer flows. Then mix another small amount and apply it. Repeat this process until the void under the DIP switch is filled and all wiring is covered. It is also a good idea to run some additional epoxy alongside the LED. If the tape dam starts to bulge or epoxy runs down the sides don't worry about it. After the epoxy starts to get hard but is still slightly pliable, remove the tape and trim the excess epoxy with a razor blade.

To use the light, thread the elastic through the buckle. Place the light on the index finger of the hand that will be closest to the radio console. Select the color you want by turning those segments of the DIP switch on. You may have to experiment to find the best position on your finger to operate the light. I would suggest starting with the light positioned on the center section of the finger so the lever switch is just behind the second knuckle. Straightening your finger should close the lever switch; relaxing it should allow the switch to open. From then on just point your finger and, "put a little light on the subject." One last item; turning off all segments of the DIP switch will not allow the lever switch to turn on the light. Thus, it can be stored with the batteries installed.



U.S. Army Information Systems Command
ATC ACTION LINE

Air Crash Search and Rescue Maps

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AN AIR CRASH search and rescue (ACS&R) map or local crash grid map is required for Army airfields under Army Regulation 420-90. In the past, airfield commanders had three options for providing adequate crash map coverage: make a crash grid map using local assets, request a Defense Mapping Agency (DMA) special ACS&R map, or request an Army topographic unit produce an ACS&R map.

The Aeronautical Services Office (with help from the Forces Command; the Aviation Center and the Safety Center) reviewed the ACS&R map program last January. Discussion centered on the continuing need for an ACS&R map, the difficulty airfield commanders have in producing a local crash grid map, and the cancellation of the program under which DMA produced special ACS&R maps. Army topographic units have continued to make ACS&R maps; but, map designs were left to the topographic units and the airfield commanders.

Conclusions reached at the meeting are:

- The standard ACS&R map produced by Army topographic units will be on a 1:50,000 topographic base map (where available) providing airfield coverage in a 7-nautical-mile radius; concentric circles (centered on the airfield) of 3, 5 and 7 nautical miles and a 5,000-meter alphanumeric grid overlayed on the map. If 1:50,000 topographic base map coverage is unavailable, the topographic unit will coordinate with the airfield commander to determine suitable base map coverage.
- Additional airfield coverage, or coverage of an adjacent training area using a smaller scale, can be requested by airfield commanders. This map will be printed on the back of the standard ACS&R map for the airfield. But, the request may delay the completion of the standard map.
- If additional airfield coverage or adjacent training area coverage is provided, the alphanumeric grid will designate the same area on both maps.
- Airfield commanders should continue to use the current ACS&R map or local crash grid map until the standard ACS&R map is received.
- The next step is to implement the standard ACS&R map program. The Aeronautical Services Office currently is compiling an Army airfield/heliport map production priority list with input from the major commands and Army components of unified commands. This list will be used by the Army topographic unit when producing ACS&R maps.

While the production list is being compiled, Army topographic units are reviewing draft specifications for ACS&R maps. These units will provide their comments on the technical aspects of the specifications and will recommend changes, additions and/or deletions. The goal is to have a procedural guide published by Department of the Army for use in future productions of ACS&R maps.

The ACS&R map program needs user input. Airfield commanders or their representatives will have to submit information to the Army topographic unit providing their ACS&R map support as follows:

- Airfield/heliport name.
- Geographic location to include requested additional airfield/training area coverage.
- Copies of photo source materials reflecting latest road construction or significant manmade details.
- Copies of local map coverage from large scale maps to no smaller than 1:250,000, including the current local crash grid map or ACS&R map.
- Overprint information; verified geographic locations of airports, heliports, hospitals, fire stations and police stations; special use airspace; obstructions and desired NAVAIDs.
- Number of copies desired (plan on stocking enough maps to last 5 years).
- Point of contact information to include the name, rank, position and complete addresses (unit, airfield message address; and AUTOVON, commercial and FTS phone numbers).

With the help of the Army community from the Department of the Army level to the map users, the Army ACS&R map program will be "back on track." This product will assist all activities involved in crash rescue while trying to locate and reach a crash site in a minimum amount of time. Also, the standardized ACS&R map allows rescue personnel to train using the map they use during an actual rescue effort. For further information, contact Mr. Thomas J. Callahan Jr., this office, AUTOVON 284-7773.